

H11072

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-10-15-01

Registry No. H-11072

LOCALITY

State Alaska

General Locality Approaches to Seward

Sublocality Seward and Northern portion of Resurrection Bay

2001

CHIEF OF PARTY

Captain James C. Gardner, NOAA

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DATE

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTER NO.
HYDROGRAPHIC TITLE SHEET		H-11072
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. RA-10-15-01
State <u>Alaska</u>		
General Locality <u>Approaches to Seward</u>		
Sublocality <u>Seward and Northern Portion of Resurrection Bay</u>		
Scale <u>1:10,000</u> Date of Survey <u>8/31/2001-9/21/2001</u>		
Instructions Dat <u>7/26/2001</u> Project No. <u>OPR-P359-RA</u>		
Vessel <u>NOAA Ship RAINIER (2120), RA-1 (2121), RA-2 (2122), RA-3 (2123), RA-4 (2124), RA5-2125, RA6-2126</u>		
Chief of Party <u>Capt James C. Gardner, NOAA</u>		
Surveyed by <u>RAINIER Personnel</u>		
Soundings taken by echo sounder,hand lead,pole <u>KNUDSEN 320M, RESON 8101 MB SEABEAM 1050D HF & HP 755CM</u>		
Graphic record scaled by <u>RAINIER Personnel</u>		
Graphic record checked by <u>RAINIER Personnel</u>		
Evaluation by <u>R. Shipley</u> Automated plot by <u>HP Design Jet 1050C</u>		
Verification by <u>E. Domingo, R. Shipley</u>		
Soundings in <u>Fathoms</u> at <u>MLLW</u>		
REMARKS: <u>Time in UTC.</u>		
Revisions and annotations appearing as endnotes were generated during office		
All depths listed in this report are referenced to mean lower low water unless otherwise noted.		
UTM Projection (zone 6)		

Descriptive Report to Accompany Hydrographic Survey H11072

Project OPR-P359-RA-01¹
Approaches to Seward, Alaska
Scale 1:10,000
August - September 2001
NOAA Ship RAINIER
Chief of Party: Captain James C. Gardner, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P359-RA-01², dated July 26, 2001, and the Draft Standing Project Instructions dated March 21, 2001. The purpose of this project is to obtain contemporary hydrography at Seward, Alaska, and approaches. The project responds to requests from a U.S. Senator, the Southwest Alaska Pilots Association, Cruise Lines, and NIMA. This project will respond to a request from Senator Ted Stevens, on behalf of the city of Seward, for contemporary hydrography in Resurrection Bay that will support the National Tsunami Inundation Mapping Program. This program is critical to the community of Seward, due to its history of severe tsunami damage.

The survey covers the area of Seward and the Northern Portion of Resurrection Bay. The survey's northern limit is latitude 60°07'23.9"N and the southern limit is latitude 60°01'00.4"N. The survey's western limit is longitude 149°26'41.2"W and the eastern limit is longitude 149°20'07.4"W.

Data acquisition was conducted from August 31, 2001 to September 21, 2001 (DN 243 to DN 264).

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P359-RA-01 Data Acquisition and Processing Report*, submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Data were acquired by RAINIER and her survey launches (EDP vessel numbers 2120, 2121, 2122, 2123, 2124, 2125, 2126). Vessels 2120, 2121, 2123, 2124 and 2126 were used to acquire Shallow-Water Multibeam (SWMB) soundings and sound velocity profiles. Vessels 2122 and 2125 were used to acquire vertical beam echosounder data (VBES), and detached positions (DPs), for shoreline verification. Vessel 2125 was used to acquire bottom samples. No unusual vessel configurations or problems were encountered during this survey.³

Several detached positions were obtained using static GPS survey. The positions obtained were then converted to manual detached positions using HPS. Refer to the *OPR-P359-RA-01 Horizontal and Vertical Control Report* for details on field methods for obtaining horizontal control.

In several locations where launches could not be utilized due to the shoal nature of the area, detached positions were obtained using a stand alone hand held GPS (Garmin- *eTrex Summit*). The factory certified horizontal accuracy of these units with the end of Selective Availability is 5-12 meters. The positions obtained were then converted to manual detached positions (DPs) using HPS. In situations when these DPs were used as the sole position an object, they are specifically addressed in the descriptive report.⁴

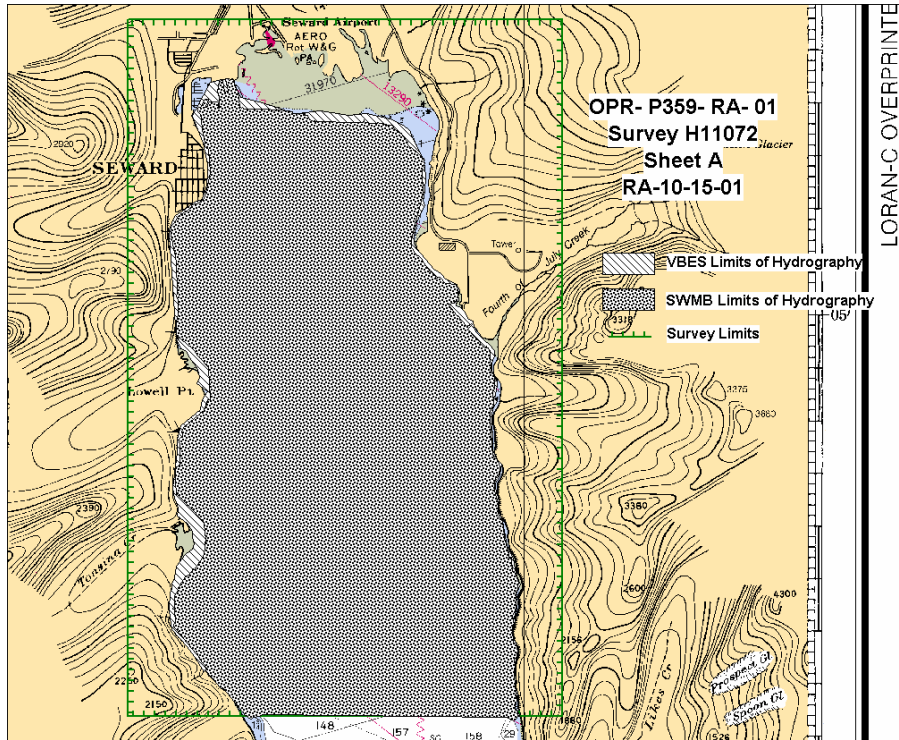


Figure 1. H11072 Survey Limits

B2. Quality Control

Crosslines

SWMB crosslines totaled 18 nautical miles, comprising 7.0 % of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the check line file averaged 81.46%, with a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order I specifications detailed in Special Publication S-44, Edition 4, as well as National Ocean Service Hydrographic Surveys Specifications and Deliverables Manual (HSSDM). See Appendix V⁵ for the detailed report. This low QCR agreement is possibly due to steep and irregular bathymetry on H11072. All data was examined thoroughly during subset cleaning, and the Hydrographer believes through manual examination of the data the accuracy standards have been met and crossline agreement is good.⁶

Junctions

The following survey junctions with H11072.⁷

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H11073	1:20,000	2001	South

At the time of this report, processing of survey H11073 was not complete. Comparisons of the junction with this survey will be discussed in the Descriptive Report for H11073.⁸

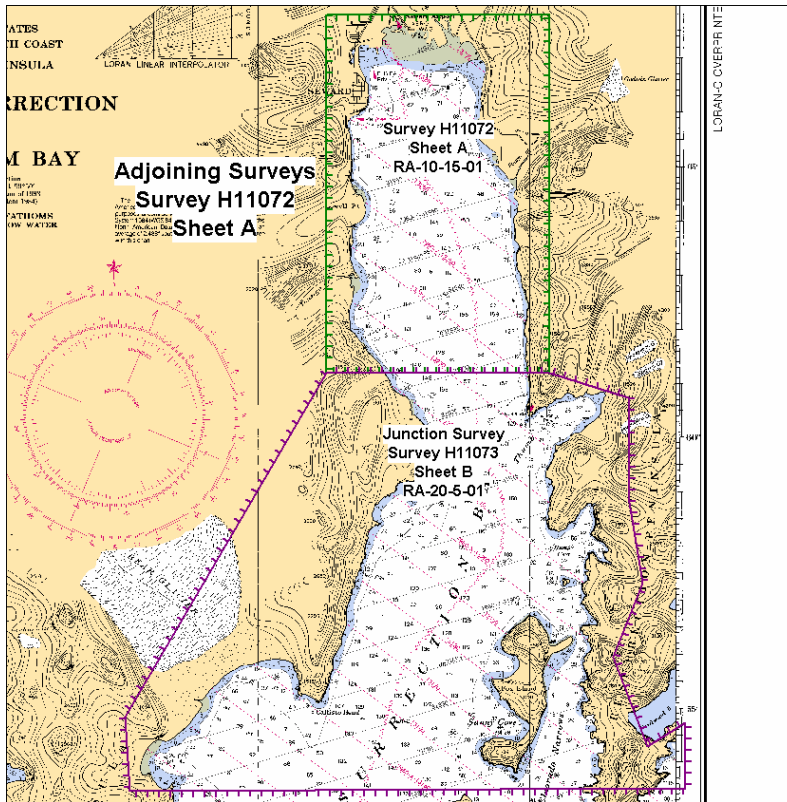


Figure 3. H11072 Junction Surveys

Final comparisons will be made at the Pacific Hydrographic Branch.⁹

Data Quality Factors

Small errors in the data due to the measurement and application of sound velocity were apparent in the data during subset processing. This was exhibited as "smiles" and "frowns" across multibeam swaths. This was most notable in shallow areas with high fresh water input, including the head of Resurrection Bay and the area immediately north of Lowell point.

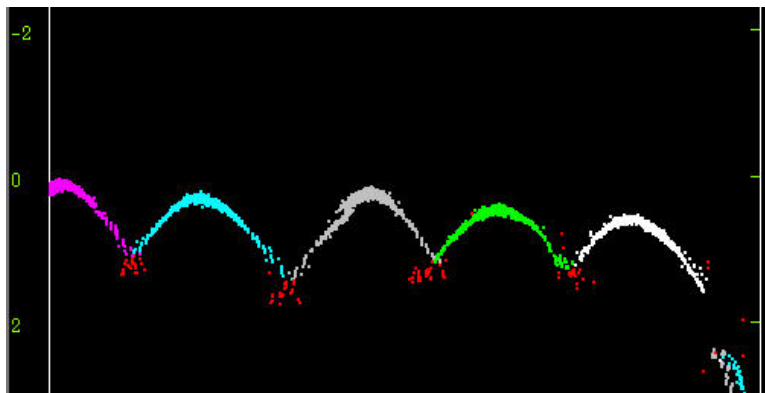


Figure 4. Sound velocity error encountered at head of Resurrection Bay

Several boat days worth of data were rejected and reacquired, due to large sound velocity errors. The frequency of cast acquisition was also increased. Additional attempts to correct these errors included, applying sound velocity corrector profiles based on the geographic position of the cast, rather than the time the cast was collected. Such application was performed on a line-by-line basis only on individual lines that exhibited profound sound velocity problems.

Despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally, and to correct for sound velocity errors in post processing through methods previously mentioned, sound velocity errors were still noticeable in lines run at the head of Resurrection Bay. Data collected by vessel 2126 on day number 261 (lines 416_2309 - 420_2208) were determined to not meet depth accuracy standards set forth in the HSSDM. However, the Hydrographer recommends retaining this sounding data, because no contemporary survey data is available in this area. This recommendation is based on the fact that the near nadir beams are least affected by sound velocity. The near nadir beams due to their relative shoal nature, when compared to the outer beams are the soundings which are brought forward during the shoal bias binning.¹⁰

B3. Data Reduction

Data reduction procedures for survey H11072 conform to those detailed in the *OPR-P359-RA-01 Data Acquisition and Processing Report*.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11072 can be found in the *OPR-P359-RA-01 Horizontal and Vertical Control Report*, submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning unless otherwise specifically mentioned. Differential corrections from U.S. Coast Guard beacons at Cape Hinchinbrook, AK (292 kHz), Potato Point (298 kHz) and Kenai, AK (310 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P359-RA-01 Horizontal and Vertical Control Report*.

Vertical Control

All data were reduced to MLLW using final approved (smooth) tide correctors and zoning obtained from N/OPS1. Elevations have not been corrected to MHW where appropriate.¹¹ Copies of the request for smooth tides, and Final Tide Note, are included in Appendix IV¹² of this report.

Detached position (DP) data were reduced to Mean Lower-Low Water (MLLW) using smooth tides from station Seward, AK (945-5090). These data were used in creating HPS tide table PTIDE 98, which was utilized in HP Tools to apply zoned tide correctors to the detached positions.¹³

The vertical datum for this project is MLLW. The operating National Water Level Observation Network (NWLON) primary tide station at Seward, AK (945-5090) will serve as control for datum determination

and as the primary source for water level reducers for survey H11072. RAINIER personnel installed and maintained a tide gauge at the following subordinate station in accordance with the Project Instructions:

Station Name	Station #	Latitude	Longitude	Installed & Maintained
Agnes Cove	945-5120	59° 46.9' N	149° 34.6'	RAINIER Personnel

A request for delivery of final approved (smooth) tides for survey H11072 was forwarded to N/OPS1 on September 27, 2001 in accordance with FPM 4.8. ¹⁴

D. RESULTS AND RECOMMENDATIONS

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

A total of twenty nine (29¹⁵) AWOIS items were located within the limits of H11072 and investigated during this survey. Investigation methods, results, and charting recommendations have been entered into the Microsoft Access AWOIS database and are submitted with the digital data.¹⁶ Printouts of the AWOIS Database forms are included in Appendix VI ¹⁷ of this report.

D.2 Chart Comparison ¹⁸

Survey H11072 was compared with chart 16682 (14th Ed., June 20, 1998, 1:81,847) and inset of chart 16682 (14th Ed., June 20, 1998, 1:10,000). ¹⁹

Chart 16682

Depths from Chart 16682 adequately agree with the current survey, with differences generally one fathom or less. Greater differences of up to 20 fathoms were noted in areas of high relief.²⁰ These differences are most likely the result of improved technology used in the current survey (including the use of multibeam and DGPS).²¹ This area was covered with 100% SWMB.

Inset of Chart 16682

Depths from Chart 16682 adequately agree with the current survey, with differences generally one fathom or less. Greater differences, up to nine fathoms were noted in areas of high relief.²² These differences are most likely the result of improved technology used in the current survey (including the use of multibeam and DGPS).²³

Final sounding comparisons will be made at the Pacific Hydrographic Branch.

D.3 Shoreline

Method of Shoreline Verification

N/NGS3 supplied photogrammetric shoreline data in vector format as Cartographic Feature Files (CFF) from project GC10494. The CFF vector shoreline data were converted for use in HYPACK for field verification and were used as the primary shoreline source. In addition, features shown on the current

editions of chart 16682 and its inset were digitized in MapInfo by RAINIER personnel and displayed in HYPACK for field verification.

Shoreline verification was conducted near predicted low water in accordance with the Hydrographic Letter Instructions and FPM 6.1 and 6.2. For this survey, the general limit of safe navigation of a survey launch was five to twenty meters offshore of the apparent low-water line. Water depths along this limit of safe navigation were approximately four meters at MLLW. Features unreachable by survey launch are depicted on the Detached Position Plot²⁴ as the Hydrographer's approximate representation of the shoreline.

Detached Positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms and processed in HPS. These indicate revisions to features and the addition of features not found on the CFF or chart. In addition, annotations describing shoreline were recorded on hard copy of digital shoreline. DP forms are included in Section I of the *Separates to be Included with Survey Data*. Several digital photographs were taken along with the detached positions. The photographs are included with the digital data, named according to corresponding fix number.²⁵

A detailed Detached Position Plot, in both paper copy and MapInfo format, is provided showing all detached positions with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot.²⁶ Verified CFF shoreline that did not require revision is in the MapInfo table "H11072_CFFshoreline." New features, changes to the shoreline, and verified features from the CFF and Charted Shoreline are depicted in the MapInfo table "H11072_ShorelineUpdates."²⁷

The features found during this survey generally matched those of the revised source and charted shoreline. Changes and new features were found and are depicted on the final Detached Position Plot.²⁸ A few items of significance are addressed below.

Source Shoreline Changes and New Features²⁹

A small section of CFF vector shoreline data was not provided to the Rainier during the survey. RAINIER personnel for orientation purposes digitized shoreline in MapInfo from the current edition of chart 16682. During field verification a shift in the shoreline was noted. Detached Position 52240 (60°02'02.12"N, 149°20'12.29"W; 369,813.3E, 6,657,489.5N) was taken at the new extent of the shoreline. The Hydrographer recommends charting the shoreline as seen on the Detached Position Plot.

During shoreline verification the Hydrographer observed discrepancies between the CFF shoreline data and the actual shoreline. These discrepancies were in some places more than 18 meters between the CFF Mean-High-Water Line and the actual shoreline.

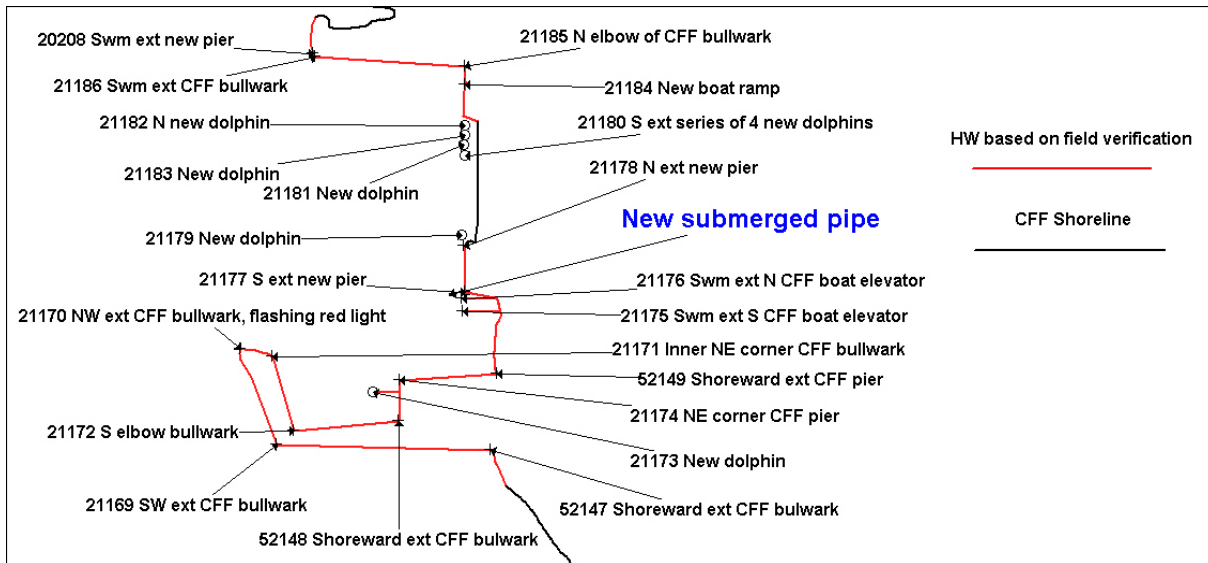


Figure 5. Entrance to Seward Dry dock facility

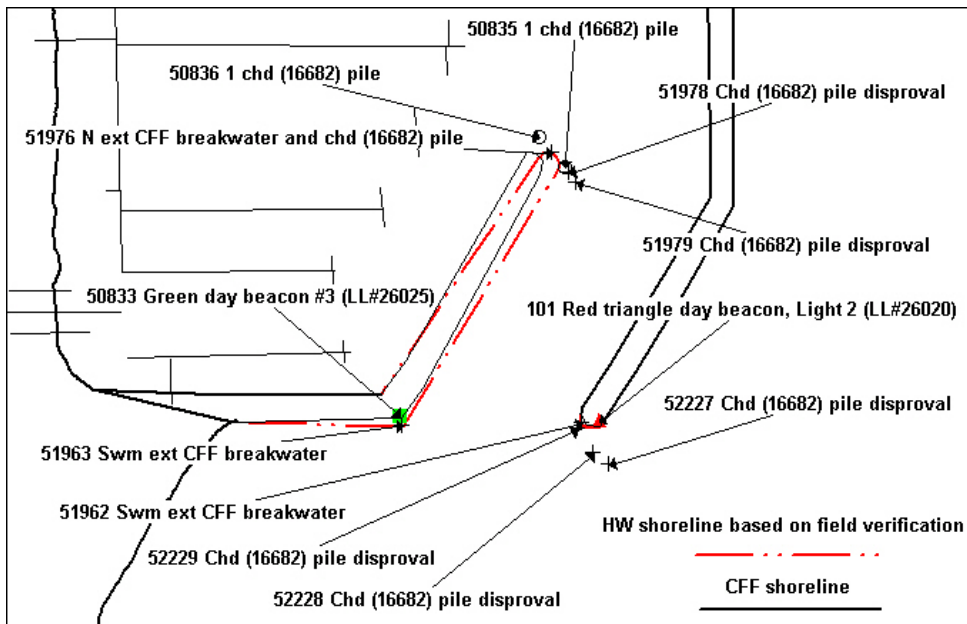


Figure 6. Seward small boat basin entrance

After discussing these discrepancies with NGS, Remote Sensing Division (RSD), RAINIER was informed that horizontal control in Resurrection Bay at the time of shoreline compilation was considered adequate within H11072 survey limits. In cases where the CFF data varies from data collected in the field, the Hydrographer recommends charting the shoreline as depicted on the Detached Position Plot. ³⁰

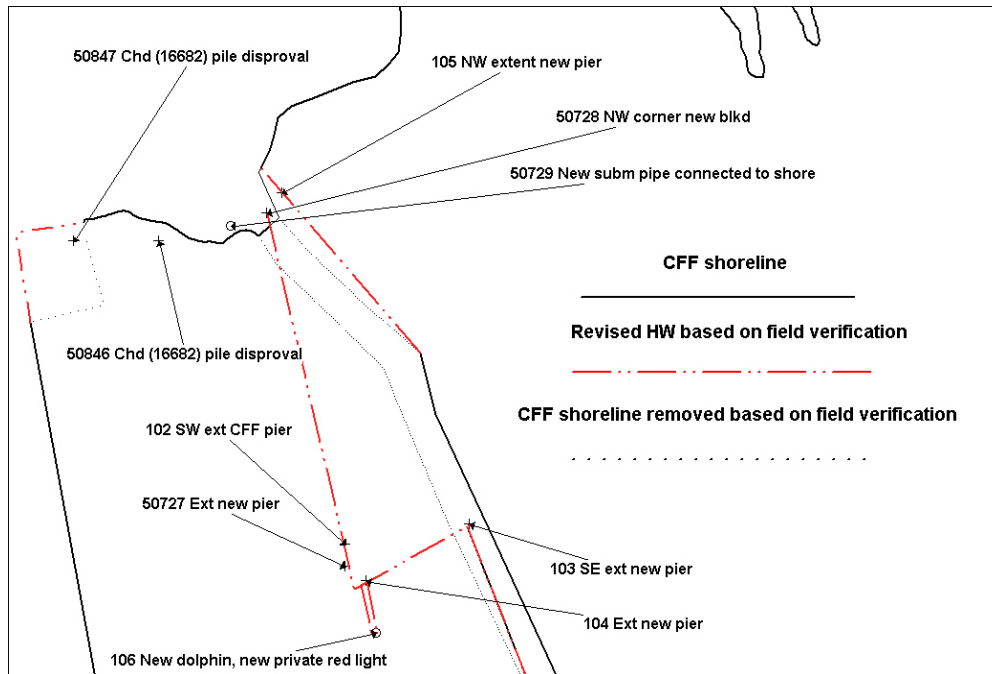


Figure 8. New Alaska Railroad Freight Dock

The new Alaska Railroad Freight Dock, located at $60^{\circ}07'07.87''N$, $149^{\circ}25'29.05''W$ was not shown on the CFF vector shoreline data provided by NGS. During the survey H11072, RAINIER personnel positioned the pier using a combination of detached positions obtained from launches (Detached Position 50727-50728) and static GPS surveys (Detached Position 102-106). The Hydrographer recommends revising the shoreline as depicted on the Detached Position and Bottom Sample Plot.³¹ The Hydrographer recommends utilizing any additional existing shoreline data or submitted as built plans available for this area in determining final shoreline.³² The point of contact in Seward is Louis Bencardino at (907)224-5550.

A portion of the Alaska Railroad Freight Dock at $60^{\circ}07'11.28''N$, $149^{\circ}25'38.95''W$ was not observed during survey H11072. During prior visits to Seward, Rainier personnel observed a floating dock at this locale used to offload fishing boats. The charted (16682) dolphin at this location is AWOIS 52791 and is discussed further in the AWOIS section of this report.³³ The Hydrographer recommends revising the shoreline as depicted on the Detached Position and Bottom Sample Plot.³⁴

The mudflats at the mouth of Resurrection River at $60^{\circ}06'59.75''N$, $149^{\circ}24'35.8''W$, have extended approximately 160 meters to seaward. Although complete hydrographic coverage for this area was not obtained during survey H11072, the Hydrographer believes that the data obtained merits revising the approximate MLLW in the area. The Hydrographer recommends revising the charted MLLW to an approximate MLLW as depicted on the Detached Position and Bottom Sample Plot.³⁵

The mudflats at the mouth of Tonsina creek at $60^{\circ}02'49.59''N$, $149^{\circ}26'16.2''W$, have extended approximately 120 meters to seaward. The Hydrographer recommends revising the charted MLLW to an approximate MLLW³⁶ as depicted on the Detached Position and Bottom Sample plot.

The mudflats located north of Lowell Point at $60^{\circ}04'32.34''N$, $149^{\circ}26'17.77''W$, have extended approximately 100 meters to seaward. The Hydrographer recommends revising the charted MLLW to an approximate MLLW³⁷ as depicted on the Detached Position and Bottom Sample Plot.

A new breakwater was positioned extending from shore to 60°03'34.09"N, 149°26'35.83"W (Detached Position 52055; 363,984.2E, 6,660,547.6N). A new boat ramp located at 60°03'35.91"N, 149°26'36.79"W (Detached Position 52054; 363,971.8E, 6,660,604.7N) was also positioned. The Hydrographer recommends these new features be charted as depicted on the Detached Position and Bottom Sample Plot.³⁸

A new private boat ramp was positioned at 60°04'14.66"N, 149°26'05.76"W (Detached Position 52246; 364,492.1E, 6,661,794.1N); Detached Position 51203 (60°04'15.16"N, 149°26'00.53"W; 364,577.0E, 6,661,797.7"N) demarcates the seaward most of a new series of five red privately maintained buoys, extending shoreward from this position north of the boat ramp. Detached Position 51202 at 60°04'14.31"N, 149°26'00.64"W (364,574.5E, 6,661,771.2N) demarcates the seaward most of a new series of four privately maintained green buoys, extending shoreward from this position south of the boat ramp. The Hydrographer recommends these new features be charted as depicted on the Detached Position and Bottom Sample Plot.³⁹

The small cove north of Lowell Point is obstructed with numerous dolphins and floating docks. Detached Position 51350 at 60°04'41.59"N, 149°26'37.14"W (364,041.5E, 6,662,635.7N) and Detached Position 51351 at 60°04'41.49"N, 149°26'36.31"W (364,054.2N, 6,662,632.4E), each depict the seaward most of a series of three dolphins extending in a general southwest direction. Detached Positions were not obtained on the inner dolphins due to the shoal nature of the area, as well as due to the series of floating docks attached to the dolphins. The Hydrographer recommends these new features be charted as depicted on the Detached Position and Bottom Sample Plot.⁴⁰

A new section of riprap exists between Detached Position 52237 (60°05'44.85"N, 149°26'43.85"W; 364,010.2N, 6,664,595.9E) and Detached Position 52238 (60°04'43.53"N, 149°26'36.75"W; 364,049.6N, 6,662,695.5E). Several charted (16682) rocks are actually now high points of the new riprap. The rocks charted (16682) at 60°05'42.99"N, 149°26'43.44"W (364,014.4E, 6,664,538.0N), 60°05'42.23"N, 149°26'43.05"W (364,019.5E, 6,664,514.2N), 60°05'40.81"N, 149°26'41.82"W (364,036.9E, 6,664,469.6N), 60°05'40.15"N, 149°26'41.3"W (364,044.2E, 6,664,448.9N), 60°05'39.01"N, 149°26'40.56"W (364,054.3E, 6,664,413.3N) should be removed.⁴¹ The Hydrographer recommends the new section of riprap be charted as depicted on the Detached Position and Bottom Sample Plot.⁴²

A new restricted area was positioned off the Alaska Sea Life Center, Seward, AK. Two privately maintained orange buoys,⁴³ Detached Position 50811 (60°05'52.7"N, 149°26'27.56"W; 364,270.6E, 6,664,829.2N), and Detached Position 50812 (60°05'55.55"N, 149°26'18.00"W; 364,421.5N, 6,664,910.3E) demarcate the seaward extent of the restricted area. The restricted area extends from the shoreline seaward to the floats. Fishing is restricted within these bounds. Additional questions regarding this restricted area should be directed to the Alaska Sea Life Center. The Hydrographer recommends that the new restricted area be charted as depicted on the Detached Position and Bottom Sample Plot.⁴⁴ In addition the Hydrographer recommends that a cautionary note be added to the chart.⁴⁵

A new series of ruins was positioned. Detached Position 50813 (60°06'02.49"N, 149°26'09.03"W; 364,569.1N, 6,665,122.0E) is the center and seaward most extent of the new ruins. The Hydrographer recommends charting the new ruins as depicted on the Detached Position and Bottom Sample Plot.⁴⁶

Two new piles in ruin were positioned at 60°06'06.62"N, 149°26'03.23"W (Detached Position 50816; 364,662.2N 6,665,245.80E). See digital photo "Fx 50816" for reference. The Hydrographer recommends these new piles be charted as depicted on the Detached Position and Bottom Sample plot.⁴⁷

Three new piles in ruin were positioned at 60°06'08.11"N, 149°26'02.46"W (Detached Position 50817; 364,675.8E 6,665,291.4N). See digital photo "Fx 50817" for reference. The Hydrographer recommends these new piles be charted as depicted on the Detached Position and Bottom Sample Plot.⁴⁸

Two new piles in ruin were positioned at 60°06'11.55"N, 149°26'00.0"W (Detached Position 50818; 364,717.7 N 6,665,396.2E). See digital photo "Fx 50818" for reference. The Hydrographer recommends these new pile ruins be charted as depicted on the Detached Position and Bottom Sample Plot.⁴⁹

Three new piles in ruin were positioned at 60°06'13.22"N, 149°25'59.39"W (Detached Position 50819; 364,729.1 N, 6,665,447.6E). See digital photo "Fx 50819" for reference. The Hydrographer recommends these new pile ruins are charted as depicted on the Detached Position and Bottom Sample Plot.⁵⁰

A new pile of boulders was positioned. Detached Position 50823 (60°06'28.60"N, 149°25'58.50"W; 364,760.2N, 6,665,922.8E) delineates the seaward most extent. See digital photo Fx 50823 for reference. The Hydrographer recommends charting the new boulder pile as depicted on the Detached Position and Bottom Sample Plot.⁵¹

A new pile in ruins was positioned at 60°06'38.4"N, 149°26'03.71"W (Detached Position 50825; 364,691.1N, 6,666,228.7E). See digital photo "Fx 50825" for reference. The Hydrographer recommends charting the pile as depicted on the Detached Position and Bottom Sample Plot.⁵²

A new series of 12 piles in ruins were positioned. The extents of the ruins are defined by Detached Position 113 (60°06'46.50"N, 149°26'13.40"W; 364,550.7N, 6,666,484.7E) and Detached Position 111 (60°06'48.2"N, 149°26'16.2"W; 364,509.5N, 6,666,538.8E) These positions were obtained using hand held stand alone GPS. See digital photos "Fx 111" and "Fx 113" for reference. The Hydrographer recommends charting these new pile ruins as depicted on the Detached Position and Bottom Sample Plot.⁵³

A new series of 42 piles in ruin were positioned. The extents were delineated by Detached Position 108 (60°06'51.8"N, 149°26'18.5"W; 364,478.1N, 6,666,651.5E) and Detached Position 109 (60°06'49.0"N, 149°26'16.1"W; 364,511.9N 6,666,563.5E). See digital photos "Fx 108" and "Fx 109" for reference. The Hydrographer recommends charting the pile ruins as depicted on the Detached Position and Bottom Sample Plot. These positions were obtained using hand held, stand-alone GPS.⁵⁴

A new outfall pipe was positioned during the survey. The outfall located at 60°06'53.42"N, 149°25'48.41"W (364,944.3E, 6,666,684.4N) and running north to shore was positioned using multibeam. This pipe is the outfall pipe to the Icicle Seafoods fish processing plant. The Hydrographer recommends charting the outfall pipe as depicted on the Detached Position and Bottom Sample Plot.⁵⁵

A new outfall pipe was positioned during the survey. The seaward most extent of the outfall located at 60°05'08.74"N 149°21'17.99"W (365,363.1E, 6,665,285.6N) was positioned using multibeam. The outfall pipe runs east to shore. This pipe is the outfall pipe to the adjacent fish off-loading facility. The Hydrographer recommends charting the outfall pipe as depicted on the Detached Position and Bottom Sample Plot.⁵⁶

A new floating dock was positioned. The extents on the dock are defined by: Detached Position 51349 Northeastern extent at 60°04'45.09"N, 149°26'32.43"W (364,118.3N, 6,662,741.2E) and Detached Position 51348 Southwestern extent at 60°04'44.36"N, 149°26'32.0"W (364,124.0N, 6,662,718.4E). See digital photo "Fx 51348-51349" for reference. The Hydrographer recommends charting the new floating dock as depicted on the Detached Position and Bottom Sample Plot.⁵⁷

Charted Features

The pier charted (16682) at 60°06'54.74"N, 149°25'46.41"W was positioned at 60°06'55.17"N, 149°25'48.07"W (364,951.5N, 6,666,738.4E), an approximate 30-meter shift to the Northwest. Detached Position 51961 demarcates the new extent of the pier. The Hydrographer recommends charting the pier as depicted on the Detached Position and Bottom Sample Plot.⁵⁸

The dolphin charted (16682)⁵⁹ at 60°06'52.2"N 149°25'45.62"W, was positioned approximately 18 meters to the northeast (Detached Position 50840; 60°06'52.73"N, 149°25'46.07"W; 364,980.7 N, 6,666,661.7 E). The Hydrographer recommends removing the charted dolphin and charting the new dolphin as depicted on the Detached Position and Bottom Sample Plot.⁶⁰

The light charted (16682) at 60°06'49.8"N, 149°25'45.97"W was positioned at 60°06'50.24"N, 149°25'46.1"W (Detached Position 50839; 364,977.9 E, 6,666,584.7 N), approximately 14 meters to the north. The light sits atop a new dolphin. See digital photo "Fx 50839" for reference. The Hydrographer recommends removing the charted light and charting the new dolphin topped by the light as depicted on the Detached Position and Bottom Sample Plot.⁶¹

The breakwater charted (16682)⁶² at 60°06'59.56"N, 149°26'04.47"W was positioned at 60°07'00.4"N, 149°26'04.67"W (Detached Position 51976; 364,701.3E, 6,666,909.5N). The Hydrographer recommends removing the charted breakwater and charting the new breakwater as depicted on the Detached Position and Bottom Sample Plot.⁶³ In addition piles charted (16682)⁶⁴ at 60°06'59.73", 149°26'04.11"W (Detached Position 51978; 364,709.2E, 6,666,888.4N) and 60°06'59.73"N, 149°26'04.12"W (Detached Position 51979; 364,712.5E, 6,666,882.8N) were each disproved using a five minute visual and echosounder search. Conditions were: Seas: 1-2 feet, Swell: 0 feet, Visibility: 2 meters. A visual search of the area revealed no sign of the pile. The Hydrographer recommends removing the charted piles.⁶⁵ The pile charted (16682)⁶⁶ at 60°06'59.55"N, 149°26'03.88"W was mispositioned. A pile was positioned at 60°07'00.31"N, 149°26'05.09"W (Detached Position 508361; 364,694.7E, 6,666,907.0N), approximately 13 meters to the northwest of the charted (16682) position. The Hydrographer believes that this is the same pile. See digital photo "Fx 50835-50836" for reference. The Hydrographer recommends removing the charted pile and charting the new pile as depicted on the Detached Position and Bottom Sample Plot.⁶⁷

The pipe charted (16682)⁶⁸ at 60°06'47.91"N, 149°26'15.64"W was not located during the survey. Due to the shoal nature of the area no hydrography was possible. However at a low stage of tide the Hydrographer did conduct a ten-minute visual search along the beach. The Hydrographer believes that the charted pipe is actually two new culverts (Detached Position 110; 60°06'48.39"N, 149°26'16.36"W; 364,507.2E, 6,666,545.1N and (Detached Position 111; 60°06'48.2"N, 149°26'16.2"W; 364,509.5E, 6,666,538.8N). See digital photo "Fx 110" and "Fx110_Fx111" for reference. The Hydrographer recommends that the charted pipe be removed and that two new culverts be charted as depicted on the Detached Position and Bottom Sample Plot.⁶⁹

The Seward Marine Services Dock charted (16682)⁷⁰ at 60°05'45.88"N, 149°26'44.46"W was positioned. The new extents of the dock are delineated by Detached Position 50797 (60°05'44.98"N, 149°26'43.52"W; 364,015.4E, 6,664,599.6N) and Detached Position 50798 (60°05'47.43"N, 149°26'43.35"W; 364,020.9E, 6,664,675.2N). See digital photo "Fx 50798_50799" for reference. The Hydrographer recommends charting the new floating dock⁷¹ as depicted on the Detached Position and Bottom Sample Plot.⁷²

The ferry dock, charted (16682) at 60°05'57.3"N, 149°26'21.23"W was positioned. The new extents of the dock are delineated by Detached Position 50807 (60°05'56.85"N, 149°26'24.37"W; 364,325.0E,

6,664,955.7N) and Detached Position 50808 (60°05'58.06"N, 149°26'18.84"W; 364,411.5E, 6,664,990.0.3N). The Hydrographer recommends revising the extents of the pier, and charting the new extents as depicted on the Detached Position and Bottom Sample Plot.⁷³ In addition the Hydrographer recommends removal of the chart note *Ferry Dock* at this location. This recommendation is based on a phone conversation with LCDR Doug Baird, NOAA Navigation Advisor, Alaska. The Alaska State ferry landing had been moved.⁷⁴ The new Alaska State Ferry landing is at the Alaska Railroad Freight Dock, located at (60°07'08.57"N, 149°25'39.37"W⁷⁵). The Hydrographer recommends addition of the chart note *Ferry Dock* at this location.⁷⁶

The islet charted (16682) at 60°03'49.51"N, 149°26'28.11"W, was disproved using 100% SWMB. A new ledge was positioned at 60°03'50.88"N, 149°26'30.12"W (364,092.0E, 6,661,063.7N; Detached Position 51247), and 60°03'50.02"N, 149°26'30.87"W (364,079.4E, 6,661,037.6N; Detached Position 51248). This is approximately 14 meters to the Northwest of the charted islets position. The Hydrographer recommends removal of the charted islet, and charting a new ledge as depicted on the Detached Position and Bottom Sample Plot.⁷⁷

The dolphin charted (16682; LL#26007) at 60°05'36.54"N, 149°22'05.1"W was positioned at 60°05'34.65"N, 149°22'05.66"W (Detached Position 20206; 368,294.7E, 6,664,123.8N), approximately 60 meters to the Southwest. The Hydrographer recommends removing the charted dolphin and charting the new dolphin as depicted on the Detached Position and Bottom Sample Plot.⁷⁸

The dolphin charted (16682, LL#26007) at 60°05'44.61"N, 149°22'03.82"W (Detached Position 52248; 368,334.2E, 6,664,430.9N) was positioned at 60°05'43.97" N, 149°22'09.23" W (Detached Position 20202; 368,334.2E, 6,664,430.8N⁷⁹), approximately 85 meters to the Southwest. The charted dolphins location was approached to within 50 meters due to the shoal nature of the area. No sign of the pile was visible above the water line. A 5-minute visual and echosounder search was conducted in the areas immediately off shore of the charted location. Conditions were: Seas: 2 feet, Swell: 0 feet, Visibility: 4 meters. The Hydrographer recommends removal of the charted dolphin⁸⁰ and charting the new dolphin as depicted on the Detached Position and Bottom Sample Plot.⁸¹

The charted (16682) Seward Forest Products Dock, at 60°05'37.86" N, 149°22'07.28" W, was positioned approximately 30 meters to the West of its charted position. The new extents of the pier are delineated by Detached Position 20203; (60°05'41.73" N, 149°22'11.92"W, 368,205.9E, 6,664,346.2N)⁸², Detached Position 20204; (60°05'38.83" N, 149°22'10.55" W, 368223.8E, 6,664,255.8N), and Detached Position 20205, (60°05'36.2" N, 149°22'08.84"W, 368,247.3E, 6,664,173.5N).⁸³ The Hydrographer recommends removal of the charted dock and charting the new dock as depicted on the Detached Position and Bottom Sample Plot.⁸⁴

The buoy charted (16682) at 60°05'00.78"N, 149°23'59.7"W (Detached Position 52236; 366,495.5E, 6,663,140.0N) was disproved. The charted location was covered with 100% SWMB. No indication of the buoy was observed in the SWMB data or during a visual search. Notice to Mariners (NM 46/99) recommends removal of the buoy located at 60°05'00 N, 149°24'00 W. The Hydrographer recommends removal of the charted (16682) ATON.⁸⁵

The sewer charted (16682)⁸⁶ at 60°06'49.6"N, 149°26'07.47"W (Detached Position 52226; 364,645.8E, 6,666,577.4N) was disproved.⁸⁷ A 5-minute visual and echosounder search was conducted at the charted location. Conditions were Seas: 2 feet, Swell: 0 feet, Visibility: 1 meter. The seaward most quarter of the charted (16682) sewer line was covered by 100 % SWMB. No indication of the sewer line was found. On September 21, 2001 (DN 264) a 10 minute visual search was conducted along the beach at the charted location an approximate low water. No indications of the sewer were observed. Due to the limited nature

of the SWMB coverage and the poor water visibility in the search radius the Hydrographic recommends retaining the sewer as charted.⁸⁸

The sewer charted (16682) at 60°06'01.02"N, 149°26'12.87"W (Detached Position 50814; 364,507.0E, 6,665,078.0N) was disproved. A 5-minute visual and echosounder search was conducted at the charted location. Conditions were Seas: 1 feet, Swell: 1 feet, Visibility: 2 meters. No indication of the sewer was observed on shore or underwater. The Hydrographer recommends removal of the charted sewer.⁸⁹

The pile charted (16682) at 60°05'49.7"N, 149°26'41.74"W (Detached Position 52216; 60°05'49.46"N, 149°26'45.1"W; 363,996.2E, 6,664,739.0N) was disproved. On day number 255, vessel number 2125 conducted a five-minute visual and VBES star pattern search for the piles in water deep enough for safe vessel navigation. Conditions were: Seas: 2 feet, Swell: 0 feet, Visibility: 4 meters (clear to the bottom). No piles were observed. See digital photo "Fx 50,799" for reference. On September 21, 2001 (DN 264), a 5-minute visual search was conducted at the charted location at approximate low water. No indications of the piles were observed. The Hydrographer recommends removal of the charted piles.⁹⁰

The pile charted (16682)⁹¹ at 60°06'55.01"N, 149°26'02.84"W (Detached Position 52227; 364,723.4E, 6,666,741.8N) was disproved. The charted location was covered with 100% SWMB. Conditions were: Seas: 1-2 feet, Swell: 0 feet, Visibility: 2 meters. A visual search of the area also revealed no sign of the pile. The Hydrographer recommends that the charted pile be removed.⁹²

The pile charted (16682)⁹³ at 60°06'55.2"N, 149°26'03.32"W (Detached Position 52228; 364,716.2E, 6,666,748.0N) disproved. The charted location was covered with 100% SWMB. Conditions were: Seas: 1-2 feet, Swell: 0 feet, Visibility: 2 meters. A visual search of the area also revealed no sign of the pile. The Hydrographer recommends that the charted pile be removed.⁹⁴

The pile charted (16682)⁹⁵ at 60°06'55.59"N, 149°26'03.83"W (Detached Position 52229; 364,708.8E, 6,666,760.3N) was disproved. The charted location was covered with 100% SWMB. Conditions were: Seas: 1-2 feet, Swell: 0 feet, Visibility: 2 meters. A visual search of the area also revealed no sign of the pile. The Hydrographer recommends that the charted pile be removed.⁹⁶

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample Plot and Final Field Sheet supersede and complement shoreline information compiled on the CFF and charts as noted.⁹⁷ These revisions are recorded in the MapInfo digital files named "H11051⁹⁸_Shoreline" and "H11051⁹⁹_ShorelineUpdates". In addition, field notes made by the Hydrographer, including verification of source features and descriptions of shoreline classification, are submitted in the digital MapInfo file "H11051¹⁰⁰_ShorelineNotes."¹⁰¹

D.4 Dangers to Navigation

An urgent Danger to Navigation Report was submitted jointly to the Pacific Hydrographic Branch and the U.S. Coast Guard on September 25, 2001. A copy of this Danger to Navigation Report is included in Appendix I.¹⁰² An additional thirteen (13)¹⁰³ Dangers to Navigation were found and reported to the Pacific Hydrographic Branch for verification and final submission to the Thirteenth Coast Guard District.

A copy of the preliminary Danger to Navigation Report is included in Appendix I.¹⁰⁴ A copy of the final report will be inserted by the Pacific Hydrographic Branch following verification and submission to the U.S. Coast Guard.¹⁰⁵

D.5 Aids to Navigation

A total of 16 Aids to Navigation were located within the limits of H11072. These aids consist of 10 lights (LL# 26007, 26010, 26015, 26020, 26025, 26040, 26043, 26045, 26050), 3 buoys (LL# 26030, 26034, 26035) and 3 groin markers (LL#26052). All aids served their intended purpose.¹⁰⁶

D.6 Miscellaneous

Seventeen (17) bottom samples were collected for this survey and are depicted on the Detached Position and Bottom Sample Plot.¹⁰⁷

E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11072 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.¹⁰⁸

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P359-RA-01	November 21,2001	N/CS34
Horizontal and Vertical Control Report for OPR-P359-RA-01	TBD	N/CS34
Tides and Water Levels Package for OPR-P359-RA-01	October 29, 2001	N/OPS1
Coast Pilot Report for OPR-P359-RA-01	TBD	N/CS26

E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

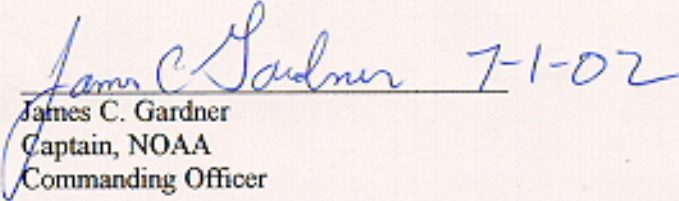
The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11072 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

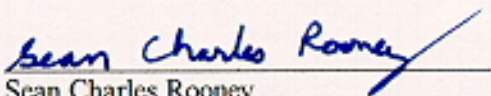
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P359-RA-01	November 21, 2001	N/CS34
Horizontal and Vertical Control Report for OPR-P359-RA-01	TBD	N/CS34
Tides and Water Levels Package for OPR-P359-RA-01	October 29, 2001	N/OPS1
Coast Pilot Report for OPR-P359-RA-01	TBD	N/CS26

Approved and Forwarded:

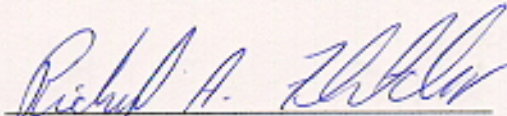

James C. Gardner
Captain, NOAA
Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager:


Sean Charles Rooney
Senior Survey Technician, NOAA

Field Operations Officer:


Richard A. Fletcher
Lieutenant Commander, NOAA

Revisions Compiled During Office Processing and Certification

- ¹ Concur
- ² Concur
- ³ Concur with hydrographer's statements
- ⁴ Concur with hydrographer's statements
- ⁵ Filed with the hydrographic data.
- ⁶ Concur with hydrographer's statements
- ⁷ A junction was made during office processing. There was good agreement and a "Joins" note has been added to the smooth sheet. The junction note has been placed on a unique level and turned off for plotting.
- ⁸ Concur.
- ⁹ Concur with clarification. Junction comparisons were made with H-11073 during office processing and found to be good. Soundings and depth curves are in good agreement.
- ¹⁰ Concur with clarification. The area in question is centered at latitude 60°06'50"N, longitude 149°24'36"W and covers an area approximately 1000 meters by 160 meters. The questionable data was inspected in Caris to locate the associated track lines and compared to prior surveys H-8822 and H-8855. Comparison between the prior surveys and the depth data in question reflected agreement to within 0.5 to 1.0 fathom. Additionally, inspection of the surrounding survey data area revealed no significant differences. The evaluator recommends charting this data as plotted on the smooth sheet.
- ¹¹ Concur.
- ¹² Filed with the hydrographic data.
- ¹³ Concur.
- ¹⁴ Approved Tide Note dated November 30, 2001 is attached.
- ¹⁵ Revise to 30.
- ¹⁶ Concur.
- ¹⁷ Copies attached to DR. Appendix VI filed with the hydrographic data.
- ¹⁸ PHB Revision- Source data for charts 16682 and 16683 largely originates from prior surveys H-8822 (1962), H-8855(1966) and miscellaneous sources. The smooth sheet was compared using digital copies of these prior surveys. Registration and legibility of the digital prior copies was good.

Soundings on the present survey generally agree within 1-5 fathoms with prior surveys H-8822 and H-8855. However, in areas of steep bottom relief, a comparison of depths with the prior survey reflect depth differences ranging from 20-35 fathoms. Differences with the prior surveys are largely attributed to more improved data acquisition techniques and equipment used since the 1960's.

A rock was transferred to the smooth sheet from H-8822 at latitude 60°06'20"N, longitude 149°25'59"W. An islet and a rock was transferred to the smooth sheet from H-8855 at latitude 60°07'13"N, longitude 149°22'35"W and latitude 60°03'24"N, longitude 149°20'33"W respectively.

The use of current data acquisition and processing has provided a better portrayal of the bottom and alongshore detail since the 1960's in Resurrection Bay. With the transfer of the prior survey

items to the smooth sheet, survey H-11072 is adequate to supersede the prior surveys within the area of common coverage.

¹⁹ During office processing, survey H11072 was compared to chart 16882 (15th Ed., Nov., 2002) and associated inset. and chart 16683 (10th Ed., Feb. 1, 2004).

²⁰ Discussion with the charted data has been discussed in the DR, section D, and as part of endnote 17. With the exceptions as noted in the descriptive report, the evaluator recommends superseding the charted data within the common area covered by the present survey.

²¹ Concur.

²² Agreement with the inset of chart 16682 (15th Ed., Nov., 2002) was good within one fathom or less. In areas of steep relief, the chart was shoaler than the current survey by up to 13 fathoms.

²³ Concur.

²⁴ Plot is filed with the hydrographic data.

²⁵ Concur

²⁶ Plot is filed with the hydrographic data.

²⁷ Concur

²⁸ Concur with clarification. Chart the Mean High Water revision as shown on the smooth sheet.

²⁹ Shoreline verification conducted by the hydrographer and portrayed on the detached position plot has been analyzed during office processing and shown on the smooth sheet as warranted. The smooth sheet should be referred to for the cartographic portrayal and chart compilation in all cases where the hydrographer has referred to the detached position and bottom sample plot. MHWL revisions are shown in red on the smooth sheet.

³⁰ Concur with clarification. Chart the Mean High Water Line revisions as shown on the smooth sheet.

³¹ Do not concur-HWL shoreline revisions are shown in red on the smooth sheet. Chart using smooth sheet information.

³² Concur.

³³ The charted dolphin was not found and recommended for removal.

³⁴ Do not concur. Chart this area using smooth sheet information.

³⁵ Do not concur- a dashed 0 fathom depth curve was used to depict the approximate MLLW on the smooth sheet. Chart the mean lower low waterline as shown on the smooth sheet.

³⁶ Do not concur. Chart using final hydrography on the smooth sheet.

³⁷ Do not concur. Chart using final hydrography on the smooth sheet.

³⁸ Concur with clarification- Chart the breakwater as shown in red on the smooth sheet. Based on chart scale, the evaluator recommends charting a ramp note as depicted on the smooth sheet.

³⁹ Concur with clarification. The privately maintained buoys are buoy floats marking a private boat ramp and not intended for navigation purposes. Based on chart scale, the evaluator recommends charting a ramp note as depicted on the smooth sheet.

⁴⁰ Concur with clarification-Based on charting scale, the evaluator recommends charting Dols note and symbol and ramp note.

⁴¹ Concur

⁴² Concur with clarification- Chart Riprap notes as shown on smooth sheet.

⁴³ Concur with clarification. The privately maintained buoys are buoy floats marking the extents of the restricted area and not intended for navigation purposes.

⁴⁴ Concur with clarification. Chart the restricted area as shown on the smooth sheet.

⁴⁵ Concur

⁴⁶ Concur with clarification—Chart dashed ruins area and note as shown on the smooth sheet.

-
- 47 Concur with clarification—Chart piles in ruins as shown on the smooth sheet.
- 48 Concur with clarification—Chart piles in ruins as shown on the smooth sheet.
- 49 Concur with clarification—Chart piles in ruins as shown on the smooth sheet.
- 50 Concur with clarification —Chart pile in ruins as shown on the smooth sheet.
- 51 Concur with clarification – Chart MHWL revision as shown in red on the smooth sheet.
- 52 Concur with clarification —Chart pile in ruins as shown on the smooth sheet.
- 53 Concur with clarification —Chart row of pile ruins as shown on the smooth sheet.
- 54 Concur with clarification —Chart row of pile ruins as shown on the smooth sheet.
- 55 Concur with clarification —A subm pipe and note has been added to the smooth sheet using Multibeam imagery. Chart this feature from the smooth sheet.
- 56 Do not concur—Do not show based on chart scale.
- 57 Concur with clarification —Chart floating dock and note as shown on the smooth sheet.
- 58 Do not concur. The Detached Position and Bottom Sample plot do not reflect the 30 meter shift as indicated by the hydrographer. However, the 30 meter shift is readily evident when comparing the Mapinfo plot and earlier edition of chart 16682. Subsequent office processing with the latest chart edition appears to portray this pier in the correct position. Evaluator recommends retaining the pier as charted.
- 59 Refer to inset.
- 60 Concur—Chart MHW dol as shown on the smooth sheet.
- 61 Do not concur—Remove charted light. Chart light at position based on present survey.
- 62 Refer to inset.
- 63 Concur with clarification. Chart the breakwater as shown on the smooth sheet.
- 64 Refer to inset.
- 65 Concur
- 66 Refer to inset.
- 67 Concur with clarification. Chart piles and note as shown on the smooth sheet.
- 68 Refer to inset.
- 69 Concur with clarification—Chart culverts as shown on the smooth sheet.
- 70 Refer to inset.
- 71 PHB Revision--~~Strikethrough floating dock~~ and replace with concrete and steel platform.
- 72 Do not concur—Chart platform as shown on the smooth sheet.
- 73 Concur with clarification—Chart MHWL revision as shown on the smooth sheet.
- 74 Concur
- 75 PHB Revision—add ;364,101.0E, 6,667147.8N
- 76 Concur
- 77 Concur with clarification. Chart ledge as a rock symbol based on chart scale.
- 78 Do not concur. Evaluator recommends that this fixed aid be charted based on present survey information.
- 79 PHB Revision--~~Strikethrough 368,334.2E, 6,664,430.8N~~ and replace with 368,249.9E, 6,664,411.8N
- 80 Concur
- 81 Do not concur. Evaluator recommends that this fixed aid be charted based on present survey information.
- 82 A dol is shown on the smooth sheet at this position
- 83 A dol is shown on the smooth sheet at this position
- 84 Concur with clarification—Chart MHWL revision as shown on the smooth sheet.

-
- ⁸⁵ Concur.
- ⁸⁶ Refer to inset.
- ⁸⁷ Do not concur. The hydrographer's recommendation is to retain the charted sewer.
- ⁸⁸ Concur.
- ⁸⁹ Concur.
- ⁹⁰ Concur.
- ⁹¹ Refer to inset.
- ⁹² Concur
- ⁹³ Refer to inset.
- ⁹⁴ Concur
- ⁹⁵ Refer to inset.
- ⁹⁶ Concur
- ⁹⁷ Do not concur. Shoreline information provided by the hydrographer has been analyzed during office processing and shown on the smooth sheet as warranted.
- ⁹⁸ Revise to H11072
- ⁹⁹ Revise to H11072
- ¹⁰⁰ Revise to H11072
- ¹⁰¹ Concur—Chart as shown on the smooth sheet.
- ¹⁰² PHB Revision-Strikethrough ~~Appendix I~~ and add this report.
- ¹⁰³ PHB Revision-Strikethrough ~~13~~ and add 15.
- ¹⁰⁴ PHB Revision-Strikethrough ~~Appendix I~~ and add this report.
- ¹⁰⁵ Concur
- ¹⁰⁶ Concur with clarification. Except for the items discussed in section D.3, "Charted Features", the remaining fixed and floating aids to navigation adequately mark the features intended. The evaluator recommends that these fixed and floating aids to navigation be considered in updating the next chart edition.
- ¹⁰⁷ Concur—Chart bottom samples as shown on the smooth sheet.
- ¹⁰⁸ Do not concur. The evaluator recommends additional survey work in Seward Harbor Marina. Refer to AWOIS item 52802.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
Marine Operations Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER
September 25, 2001

Commander (mon)
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, Alaska 99802-5517

Dear Sir or Madam:

It is requested that the following dangers to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned this feature while conducting hydrographic survey H11073 August through September 2001 in the Approaches to Seward, Alaska. The danger is shown graphically on the attached chartlets.

The following danger to navigation affect chart the following charts:

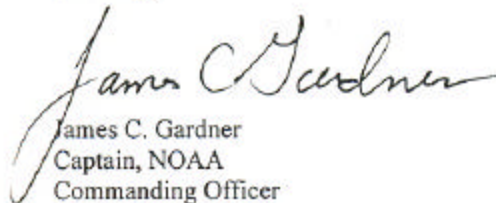
<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16682	1:81,847	14 th	June 20, 1998

The positions are on the North American Datum of 1983 (NAD83) datum and depths have been corrected to Mean Lower Low Water using predicted water level data.

<u>Feature</u>	<u>Depth(fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Depth (m)</u>
Submerged buoy	1.5	60°02'23.866"	149°26'29.069"	2.7

This is advance information subject to office review. Questions concerning this letter should be directed to the Chief, Pacific Hydrographic Branch, (206) 526-6835. Refer to survey project OPR-P359-RA-01. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at: foo.rainier@ranems.pmc.noaa.gov.

Sincerely,


James C. Gardner
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
MOCP
N/CS261
N/CS34



Chart 16682

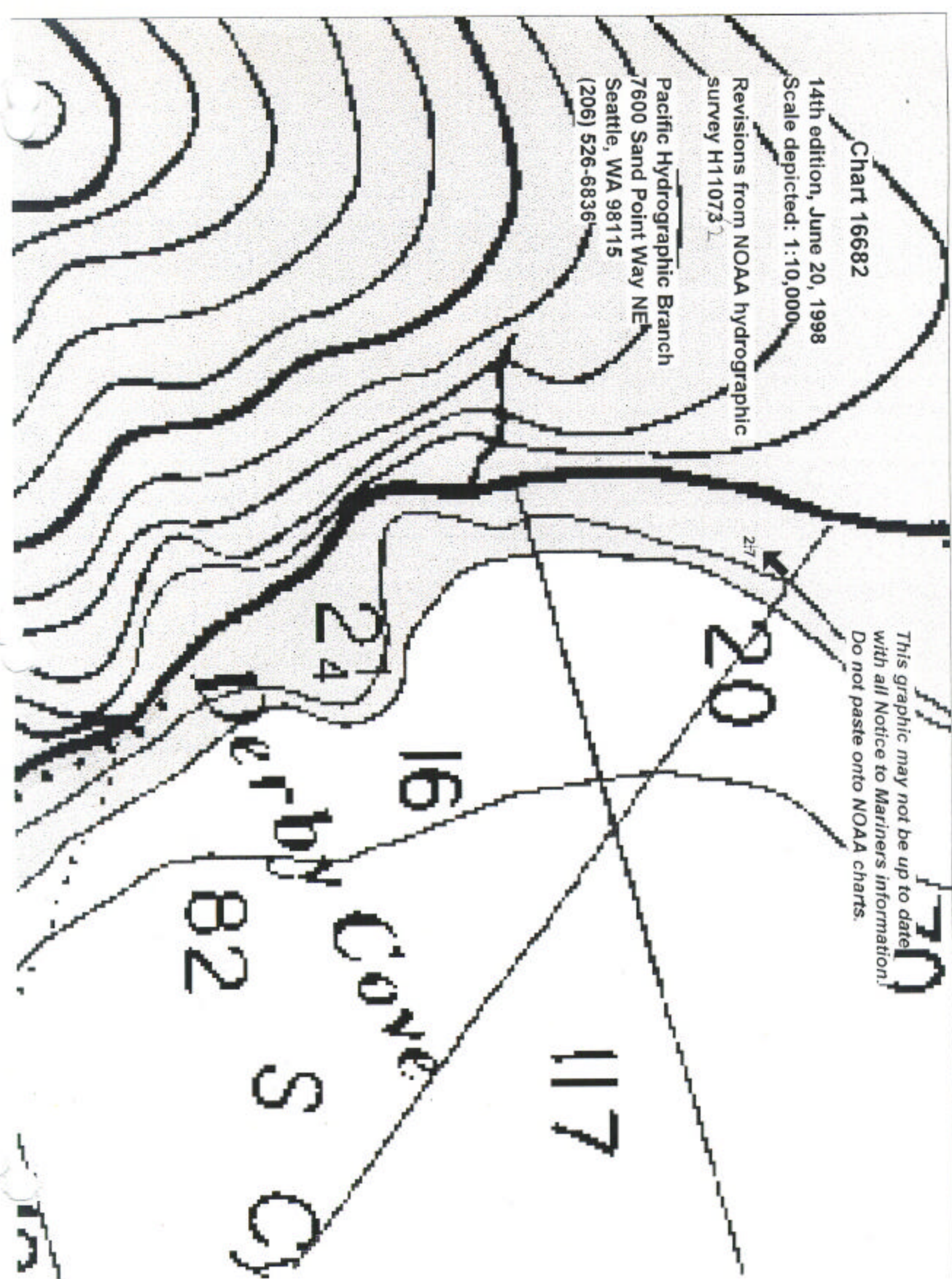
14th edition, June 20, 1998

Scale depicted: 1:10,000

Revisions from NOAA hydrographic
survey H11073₁

Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836

This graphic may not be up to date
with all Notice to Mariners information.
Do not paste onto NOAA charts.



Danger to Navigation Report

Hydrographic Survey Registry Number: H11072

Survey Title: State: Alaska
Locality: Resurrection Bay
Sub-locality: Seward and Northern Portion of Resurrection Bay

Project Number: OPR-P359-RA-01

Survey Dates: August 31-September 21, 2001

Depths are reduced to Mean Lower Low Water using observed tides.
Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

Chart	Scale	Edition	Date
16682	1:81,847	14 th	June 20, 1998
16682 (Inset)	1:10,000	14 th	June 20, 1998

DANGERS:

Feature	Depth(fms)	Latitude	Longitude
Sounding	-1	60°02'01.090"N	149°20'15.088"W
Sounding	0	60°06'24.317"N	149°21'54.873"W
Sounding	0¼	60°05'50.257"N	149°26'38.222"W
Sounding	0¼	60°06'50.470"N	149°24'33.336"W
Sounding	0¼	60°06'54.456"N	149°25'14.694"W
Sounding	0½	60°06'41.371"N	149°22'19.803"W
Sounding	0¾	60°05'57.180"N	149°21'59.364"W
Sounding	1	60°06'33.161"N	149°22'11.019"W
Sounding	1¼	60°05'51.757"N	149°26'36.750"W
Sounding	3¼	60°07'04.674"N	149°25'38.753"W
Sounding	4½	60°04'32.083"N	149°20'44.791"W
Sounding	4¾	60°06'47.515"N	149°24'19.170"W
Sounding	4¾	60°06'34.631"N	149°25'57.525"W
Sounding	4¾	60°04'39.890"N	149°20'47.130"W
Sounding	7½	60°02'23.865"N	149°20'16.242"W

COMMENTS:

Questions concerning this report should be directed to the Commanding Officer, NOAA Ship RAINIER, at (206)553-4794 (inport November through mid-March), 1-(877)665-6533 (at sea mid-March through November), or by e-mail at co.rainier@noaa.gov.

dtvri 3

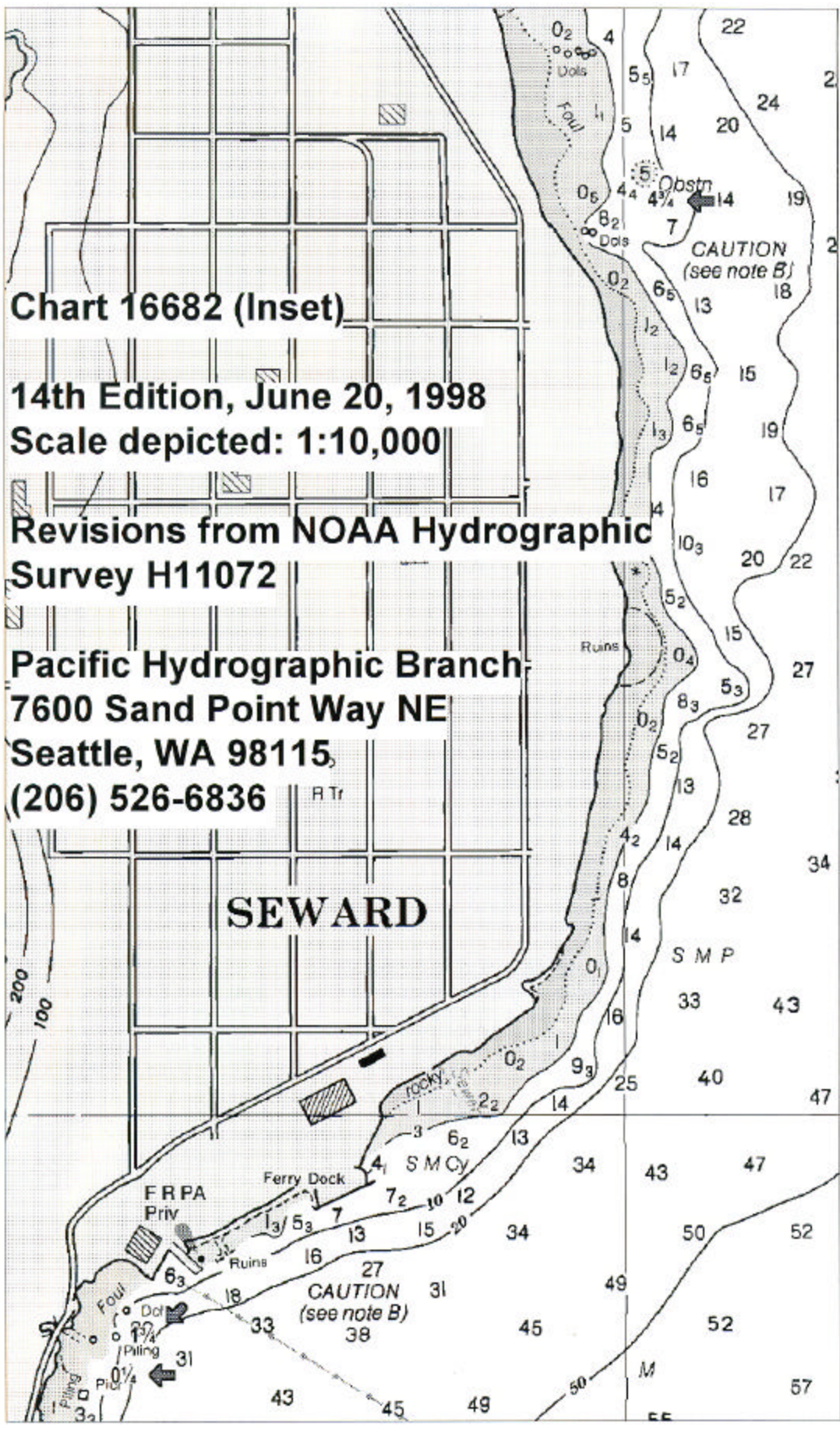


Chart 16682 (Inset)

14th Edition, June 20, 1998

Scale depicted: 1:10,000

**Revisions from NOAA Hydrographic
Survey H11072**

**Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836**

SEWARD

11034

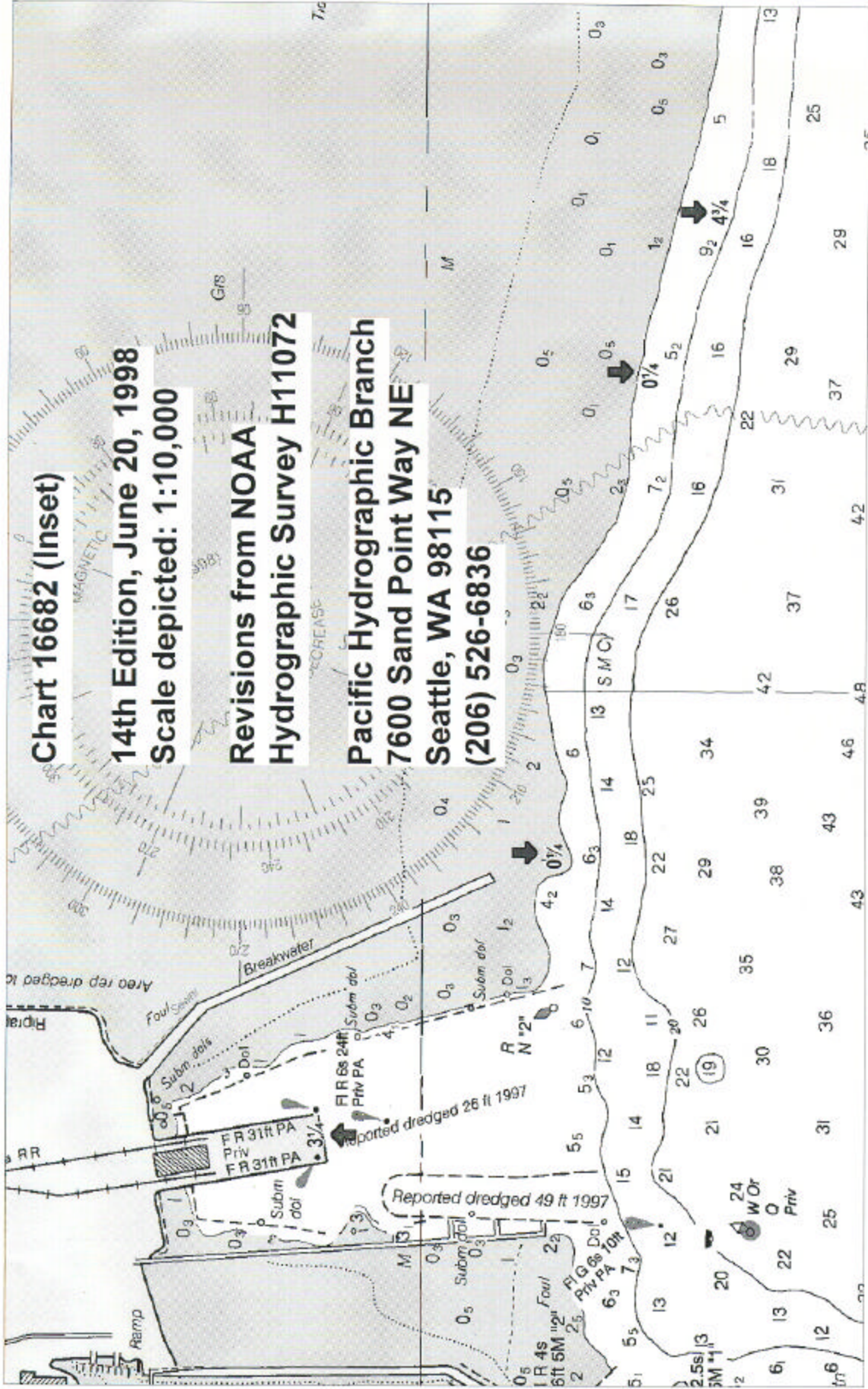
Chart 16682 (Inset)

14th Edition, June 20, 1998

Scale depicted: 1:10,000

Revisions from NOAA
Hydrographic Survey H11072

Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836



dtos 5

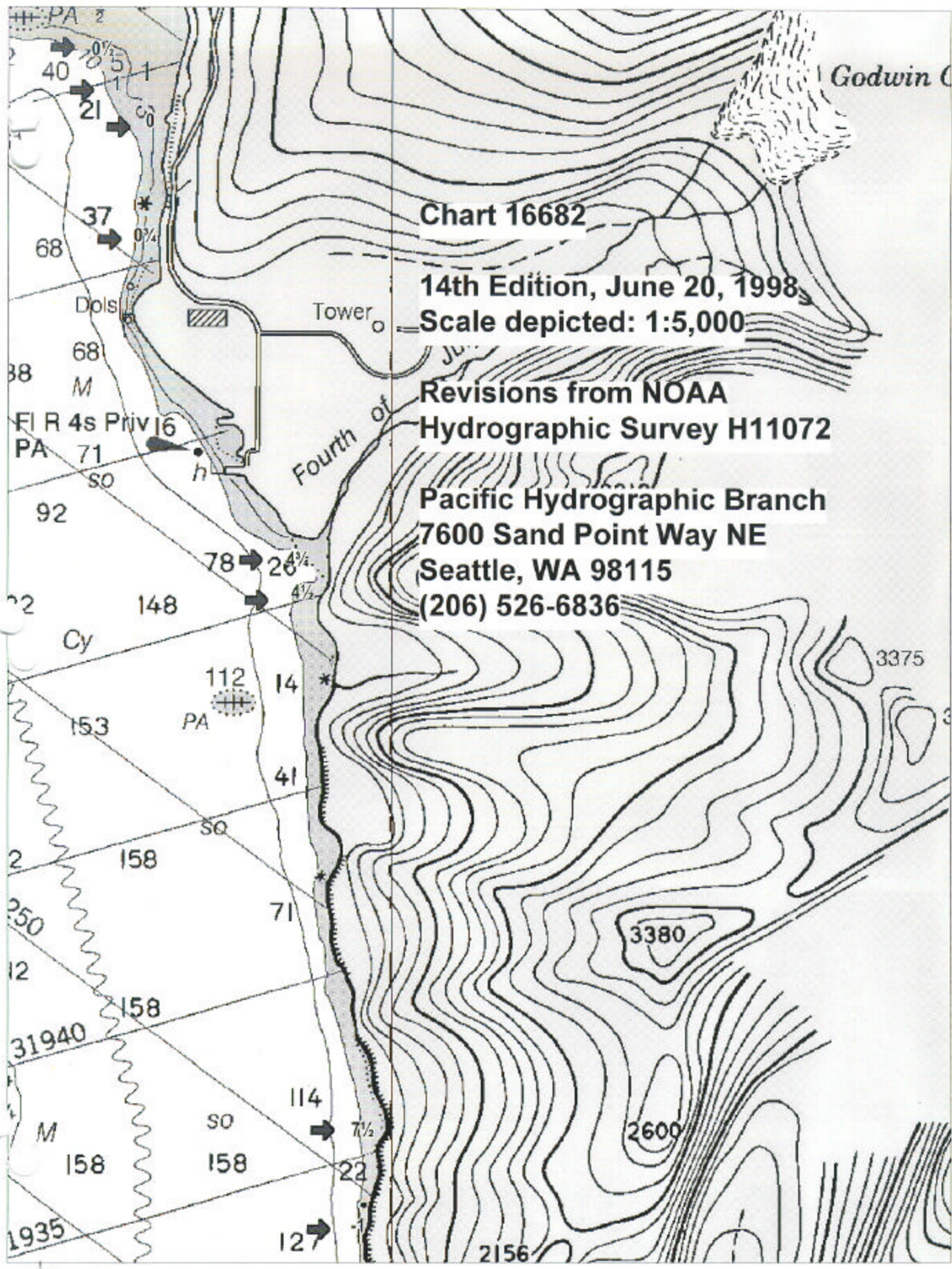


Chart 16682

14th Edition, June 20, 1998

Scale depicted: 1:5,000

**Revisions from NOAA
Hydrographic Survey H11072**

**Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836**

Down to

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History .

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
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RADIUS INIT ASSIGNED
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Techniqnote

History HISTORY
BP65529/64--USC&GS, POST EARTHQUAKE AIR PHOTO REV, 1964; PIER OR BREAKWATER FEATURE INDICATED TO BE IN RUINS.

Fieldnote INVESTIGATION
DATE(S): 08/31/2001, 09/12/2001, 09/13/2001, 09/17/2001, 09/17/2001, 09/18/2001, 09/21/2001
(DN: 243, 255-256, 260-261, 264)
HYDROGRAPHIC SURVEY NUMBER: H11072
VN: 2121 and 2125
INVESTIGATION METHODS USED: (100% SWMB, VBES, Dive, Visual)
SURVEYED POSITION: LAT. 60-06-47.49 N LON. 149-26-09.29 W
POSITION DETERMINED BY: DIFFERENTIAL GPS and stand alone GPS
INVESTIGATION SUMMARY: The seaward most half of the assigned search radius was covered with 100% SWMB by VN 2121 on DN: 256 and 261. The shoreward half of the assigned search radius was developed using VBES at a 50 meter line spacing by VN 2125 on DN: 243 and 255. A dive was conducted on DN: 260. A 30 meters radius circle search was conducted at the seaward most extent of the assigned search radius. Water visibility was 10 feet. A large broad pile of rocky rubble was observed. There was no central high point. Divers followed this rubble pile shoreward approximately halfway into shore. No central high points were observed. On DN: 264 a visual search was conducted along the shore at approximate low water. The shoreward extent of the item was observed to be a badly deteriorated rock and rubble wall (see attached photo). A detached position was taken using a stand alone hand held GPS on the shoreward most extent of the rock wall.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends that the charted obstruction be removed from the chart. The Hydrographer recommends that a new expanded obstruction should be charted as depicted on the DP/BS plot. This new limit is based on 100% SWMB coverage and visual observations.
EVALUATOR COMMENTS: Concur with clarification. Chart area as Foul with limits as shown on smooth sheet.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
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YEARSUNK

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CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ
Techniqnote

History HISTORY
H8822/65-66; ROW OF 10 DOLPHINS SHOWN FROM POS. 60-06-40.1 N 149-26-02.1 W (OFFSHORE) TO 60-06-40.2 N 149-26-05.25 W (INSHORE) (CONVERTED TO NAD 83)

Fieldnote INVESTIGATION
DATE(S): 09/12/2001 and 09/13/2001 (DN: 255 and 256)
Hydrographic SURVEY NUMBER: H11072
VN: 2121 and 2125
INVESTIGATION METHODS USED: (VBES, SWMB, Visual)
SURVEYED POSITION: LAT. 60-06-40.31 N LON. 149-26-02.55 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: A detached position (Fx 50,826) at 60-06-40.31 N 149-26-02.55 W (E. 364,711.1 , N. 6,666,287.2) was obtained on the seaward most pile by VN: 2125 on DN: 247. See attached photos. SWMB was also conducted in the area on DN: 256 by VN 2121. 100% SWMB was not obtained due to the shoal nature of the area. Positions of the piles depicted on the on DP/BS plot were obtained from SWMB data where possible (piles in black). The remainder of the piles (piles in pink) were positioned based on photo documentation.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends that the five charted dolphins be removed from the chart. The Hydrographer recommends that the 12 new piles be charted as depicted on the DP/BS plot. (see attached graphic).
EVALUATOR COMMENTS: Do not concur. The present survey has a position for one pile only. The smooth sheet has delineated the remaining area as foul with piles. The evaluator recommends charting the pile and foul limits as positioned on the present survey and retaining the remaining charted dols as piles.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
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YEARSUNK

NIMANUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
 LATDEC: LONDEC: GPQUALITY
 GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote
 DATE(S): 08/31/2001, 09/04/2001, 09/13/2001 (DN: 243, 247 and 256)
 Hydrographic SURVEY NUMBER: H11072
 VN: 2121 and 2125
 INVESTIGATION METHODS USED: (SWMB, VBES, Visual)
 SURVEYED POSITION: 60-06-16.12 N 149-25-59.67 W, N. 6,665,537.7, E. 364,744.5) to
 60-06-21.36 N 149-25-58.69 W , E. 364,734.4, N. 6,665,784.2)
 POSITION DETERMINED BY: DIFFERENTIAL GPS
 INVESTIGATION SUMMARY: On DN 243, VN2125 conducted VBES at a line 50 metes. On DN 247 VN 2125 conducted visual investigations of the charted ruins (see attached photos). The ruins were determined to be more extensive than charted. Three detached positions were taken (FX 50,820, 50,821, and 50,822) to define the new extents of the ruins. FX 50,820 (60-06-16.12 N 149-25-59.67 W, N. 6,665,537.7, E. 364,744.5) deliniates the south end of the ruins. FX 50,821 (60-06-21.36 N 149-25-58.69 W , N. 6,665,614.7, E. 364,763.6) deliniates the seaward most extent of the ruins. FX 50,822 (60-06-21.36 N 149-25-58.69 W , E. 364,734.4, N. 6,665,784.2) delineates the northern extent of the ruins. On DN 256 VN 2121 conducted SWMB in areas deep enough for safe vessel navigation.
 CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends removal of the charted ruins. The Hydrographer recommends charting the new extents of ruins as depicted on the DP/BS plot.
 EVALUATOR COMMENTS: Concur with clarification. Chart a charted ruins area and note as shown on the smooth sheet.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ
Techniqnote

History

Fieldnote
DATE(S): 09/04/2001 and 09/12/2001 (DN: 247 and 255)
Hydrographic SURVEY NUMBER: H11072
VN: 2125 and 2121
INVESTIGATION METHODS USED: (100% SWMB, VBES, Visual)
SURVEYED POSITION: LAT. 60-05-55.14 N LON. 149-26-31.12 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: On DN 247 VN 2125 conducted a visual search for the charted ruins. A concrete bulkhead in ruins was determined to be the seaward most extent of the ruins. A detached position (FX 50,803) was taken in the center of the ruins, at 60-05-55.15 N 149-26-31.13 W (E. 364,218.2 , N. 6,664,906.7). On DN 255 VN 2121 conducted 100% SWMB coverage to the seaward of these ruins. No indication of additional ruins were observed to seaward of the concrete ruins at the time of data acquisition or in post processing.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends that the charted dock in ruins be removed. The Hydrographer recommends charting the new extents of ruins as depicted on the DP/BS plot (see attached pictures).
EVALUATOR COMMENTS: Concur with clarification. Remove charted ruins and chart ruins as shown on the smooth sheet.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote
DATE(S): 09/12/2001 (DN: 255)
Hydrographic SURVEY NUMBER: H11072
VN: 2125
INVESTIGATION METHODS USED: (Visual, VBES)
SURVEYED POSITION: LAT. 60-05-52.58 N LON. 149-26-37.84 W (E. 364,111.8 , N. 6,664,831.4)
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: On DN 255 VN 2125 conducted a five minute visual and VBES star pattern search for the portion of the assigned search radius deep enough for safe vessel navigation. For the remainder of the assigned radius a visual search was conducted . Conditions were seas: 2 feet, Swell: 0 feet, Visibility: (4 meters) clear to the bottom. A detached position FX 51,966 (Lat. 60-05-52.58 N Long.149-26-37.84 W E. 364,111.8 , N. 6,664,831.4) was taken as a disproval
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recomends removal of the charted dolphin.
EVALUATOR COMMENTS: Concur. Chart area as shown on the smooth sheet.

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

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Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

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YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote
DATE(S): 09/04/2001 (DN: 247)
Hydrographic SURVEY NUMBER: H11072
VN: 2125
INVESTIGATION METHODS USED: (Visual , VBES)
SURVEYED POSITION: LAT. 60-05-49.61 N LON. 149-26-41.36 W (E. 364,054.2, N. 6,664,741.3)
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: On DN: 247 VN 2125 conducted a visual and echosounder search. Conditions were seas: 2 feet, Swell: 0 feet, Visibility: (4 meters) clear to the bottom. A detached position (FX 50,799) at 60-05-49.61 N 149-26-41.36 W (E. 364,054.2 , N. 6,664,741.3).
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends removing the charted pier. The Hydrographer recommends charting a new pier as depicted on the DP/BS plot (see attached pictures).
EVALUATOR COMMENTS: Do not concur. Remove charted pier and chart platform as shown on smooth sheet.

Proprietary

YEARSUNK

NIMANUM

RECRD 52815 VESSLTERMS UNKNOWN CHART 16682 AREA P
CARTOCODE 0100 SNDINGCODE DEPTH

LAT83 60 06 48.5 LONG83 149 23 00.3 NATVDATUM 06
LATDEC: 60.113472222222 LONDEC: 149.38341666667 GPQUALITY Low
GPSOURCE Direct

PROJECT OPR-P359 ITEMSTATUS Assigned SEARCHTYPE Full
RADIUS 300 INIT MCR ASSIGNED 7/2/2001
TECNIQ MB,ES,VS,DI,SD
Techniqnote SEARCH NOT REQUIRED OUTSIDE OF 10 FM CURVE

History HISITORY
CL132/67--USCG, 17TH CGD, 1/25/67, CHART CORRECTION LETTER; A SUNKEN BARGE, VISIBLE AT LOW WATER, IS
LOCATED IN APPROX. POS. 60 06 51N, LONG 149 22 53W NAD 27.
CL804/74--CHART CORRECTION LETTER, NOS, 1974; WRECK NOT SEEN

Fieldnote INVESTIGATION
DATE(S): 08/31/2001, 09/04/2001, 09/05/2001, 09/19/2001 (DN:243, 247, 248, 262)
Hydrographic SURVEY NUMBER: H11072
VN: 2125 and 2126
INVESTIGATION METHODS USED: (Visual)
SURVEYED POSITION: LAT. 60-06-48.45 N LON. 149-22-55.5 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: On DN 248 VN 2122 the wreck was visually identified on the mud flats at the approximate charted location. The wreck was badly deteriorated. An engine block extending approximately one meter out of the mud was visible. In addition remnants of the wooden hull protrude from the mud. Due to the shoal nature of the area extremely limited sounding data was collected on the charted location of the wreck at higher stages of tide, by the following vessels: VN2125 DN:243 and 248, VN 2126 on DN: 247 and 262. No sign of the wreck was observed at these times. Depths in the charted position of the wreck range from 2.2 to .2 fathoms.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends charting (16682) the wreck at its current position and removal of the position approximate. The Hydrographer also recomends that the wreck be charted as a wreck exposed.
EVALUATOR COMMENTS: Concur with clarification. Chart visible wreck as shown on the smooth sheet and retain the charted note PA.

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YEARSUNK 1967 NIMANUM

Print Record

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History
CL1034/92--NOAA SHIP RAINIER; SURVEY/CHARTING REQUEST DOCUMENTATION; RESPONSE FROM CAPT. MIKE BRITTAIN OF ANDERSON TUG AND BARGE (TEL 907-224-5506) STATED THAT THE PLATFORM CHARTED 1 1/2 NM EAST OF SEWARD WAS AN OIL PLATFORM TEMPORARLY STORED IN THE AREA. THE PLATFORM HAS LEFT THE AREA AND SHOULD NOT BE CHARTED. CHARTS STILL SHOW THE PLATFORM AS OF THE 14TH EDITION, 6/98.

Fieldnote
DATE(S): 09/04/2001, and 09/05/2001 (DN: 247 and 248)
Hydrographic SURVEY NUMBER: H11072
VN: 2124, and 2126
INVESTIGATION METHODS USED: (100% SWMB, Visual)
SURVEYED POSITION: LAT. 60-06-27.84 N LON. 149-22-59.79 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: The assigned search radius was covered with 100% SWMB. No platform was observed.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends that the charted platform be removed.
EVALUATOR COMMENTS: Concur. Chart area as shown on the smooth sheet.

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

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YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote
DATE(S): 09/12/2001, and 09/18/2001 (DN: 255 and 261)
Hydrographic SURVEY NUMBER: H11072
VN: 21221, and 2125
INVESTIGATION METHODS USED: (VBES, SWMB, Dive, Visual)
SURVEYED POSITION: LAT. 60-03-53.12 N, LON. 149-26-30.21 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: On DN: 255 a dive was conducted. In the assigned search radius. A 40 meter circle search was conducted. Water visibility was twenty feet. A small engine block was located 50 meters to the south of the assigned search radius. The engine block was resting on the new ledge and is navigationally insignificant. No other sign of the wreck was located. VN: 2125 took FX: 52036 at position 60 03' 52.06 N, 149 26' 29.66 W (364,099.0 E, 6,661,099.9 W) as a disproval. On DN: 261 VN 2121 obtained 100% SWMB coverage within the assigned search radius in areas deep enough for safe vessel navigation. No indication of the wreck were observed.
CHARTING RECOMMENDATION (HYDROGRAPHER): The Hydrographer recommends that the charted wreck be removed.
EVALUATOR COMMENTS: Concur.

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YEARSUNK NIMANUM



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 30, 2001

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P359-RA-2001
HYDROGRAPHIC SHEET: H11072

LOCALITY: Approaches to Seward, AK
TIME PERIOD: Aug. 31 - Sept. 21, 2001

TIDE STATION USED: 945-5090 Seward, AK
Lat. 60° 7.2'N Lon. 149° 25.6'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.947 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: CA500.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Thomas V. Mero 12/3/01

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Printed on Recycled Paper

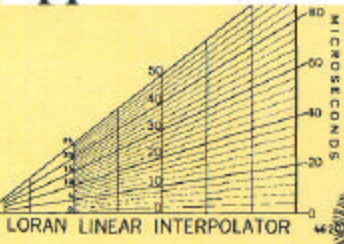
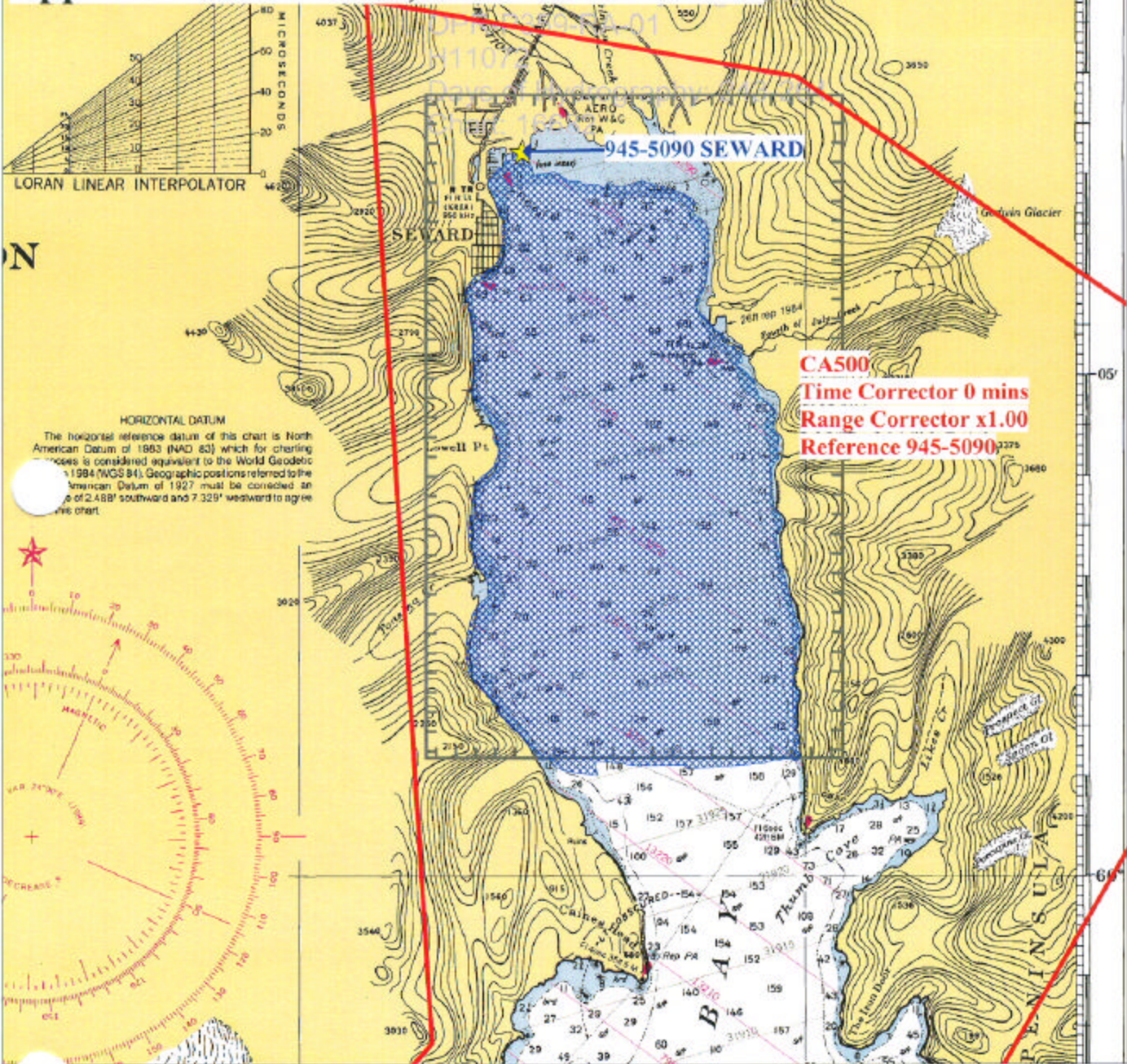


Final Tidal Zoning for OPR-P359-RA-2001

Approaches to Seward, AK - Sheet H11072

20'

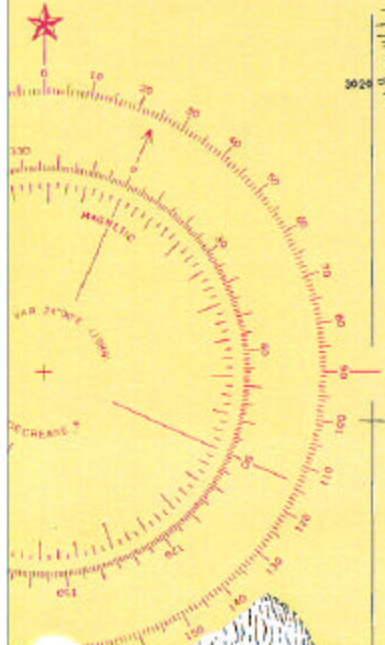
15'



N

HORIZONTAL DATUM
The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83) which for charting purposes is considered equivalent to the World Geodetic System of 1984 (WGS 84). Geographic positions referred to the American Datum of 1927 must be corrected an amount of 2.488' southward and 7.329' westward to agree with this chart.

CAS00
Time Corrector 0 mins
Range Corrector x1.00
Reference 945-5090



Final tide zone node point locations for **OPR-P359-RA-2001**,
Sheet H11072.

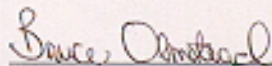
Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes
 Longitude West),
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone CA500	945-5090	0	1.00
-149.592208 59.893478			
-149.456543 59.97201			
-149.478042 60.144898			
-149.336485 60.132389			
-149.153716 60.068871			
-149.280941 59.957638			
-149.290309 59.895001			
-149.567018 59.750298			
-149.560923 59.760449			
-149.596704 59.764695			
-149.607227 59.803421			
-149.63564 59.804481			
-149.592208 59.893478			

APPROVAL SHEET
H11072

Initial Approvals:

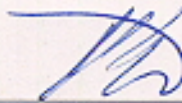
The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.



Bruce Olmstead
Cartographer, Cartographic Team
Pacific Hydrographic Branch

Date: 10/26/04

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 Descriptive Report.

 , LCDR/NOAA

Donald W. Haines
LCDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 4 NOV 2004

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-11072

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
16682	5/21/03	R. Shipley	Full Part Before After Marine Center Approval Signed Via Full Application of Drawing No. SNDGS, CURVES AND FEATURES THRU INSET, CHART 16683 AND SMOOTH SHEET.
16682	5/19/03	R. Shipley	Full Part Before After Marine Center Approval Signed Via Full Application Drawing No. OF SNDGS, CURVES and FEATURES FROM THE SMOOTH SHEET.
16683	5/29/03	R. Shipley	Full Part Before After Marine Center Approval Signed Via Full Application Drawing No. OF SNDGS, CURVES and FEATURES FROM THE SMOOTH SHEET.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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