

9521

Diag. Cht. No. 6002-2.

Form 504	
U. S. COAST AND GEODETIC SURVEY	
DEPARTMENT OF COMMERCE	
DESCRIPTIVE REPORT	
Type of Survey	Topographic
Field No. Ph-62	Office No. T-9521
LOCALITY	
State	Washington
General locality	Willapa Bay
Locality	Grayland
1945-56	
CHIEF OF PARTY	
C.W.Clark, Chief of Field Party	
E.H.Kirsch, Baltimore Photo. Office	
LIBRARY & ARCHIVES	
DATE	July 31, 1959

B-1870-1 (1)

9521

DATA RECORD

9521
✓

T-9521

Project No. (II): Ph-62

Quadrangle Name (IV):

Field Office (II): Westport, Washington

Chief of Party: Charles W. Clark

Photogrammetric Office (III): Balto. Photo. Office

Officer-in-Charge: E. H. Kirsch

Instructions dated (II) (III): 2 March 1952

Copy filed in Division of
Photogrammetry (IV)

Letter No. 711-sal, dated 3 Aug. 1951

" " 731-mkl, Horizontal control, dated 17 Aug. 1951

Instructions supplement 1, dated 15 Feb. 1952.

Letter No. 73-mkl, Horizontal & Vertical Control, dated 13 May 1952

Method of Compilation (III): Air Photographic (Multiplex)

Manuscript Scale (III): 1:17,000

Stereoscopic Plotting Instrument Scale (III): 1:17,000

Scale Factor (III): 1.000

APR 21 1955

Date received in Washington Office (IV):

Date reported to Nautical Chart Branch (IV):

Applied to Chart No.

Date:

Date registered (IV): 14 Mar 1958

Publication Scale (IV):

Publication date (IV):

Geographic Datum (III): NA 1927

Vertical Datum (III):

Mean sea level except as follows:
Elevations shown as (25) refer to mean high water
Elevations shown as (5) refer to sounding datum
i.e., mean low water or mean lower low water

Reference Station (III): GRAY, 1926

Lat.: 46° 48' 41.171"

Long.: 124° 05' 44.471"

Adjusted
~~Uncorrected~~

Plane Coordinates (IV):

State:

Zone:

Y=

X=

Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office,
or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.

DATA RECORD

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Field Inspection by (II): J. H. Winniford, K. Huey, G. R. Combs

Date: 15 June 1952

Planetable contouring by (II):

Date:

Completion Surveys by (II):

Date:

Mean High Water Location (III) (State date and method of location):

From South sheet limits to vicinity of Grayland, traverse points were given on the MHWL approximately every mile, from Grayland North established by office interpretation by analogy.

The remainder in South Bay, 15 June 1952 (Photogrammetric)

Projection and Grids ruled by (IV): S. Rose

Date: 2 Feb. 1953

Projection and Grids checked by (IV): T. L. Jones

Date: 3 April 1953

Control plotted by (III): D. M. Brant
J. D. McEvoy

Date: 2 Oct. 1953

Control checked by (III): A. K. Heywood

Date: 3 April 1953

Radial Plot or Stereoscopic Control extension by (III): D. M. Brant

Date: 12 Nov. 1953

Stereoscopic Instrument compilation (III):
Planimetry)
Contours) E. L. Rolle

Date: 11 Oct. 1954

Date:

Manuscript delineated by (III): J. Y. Councill

Date: 11 Mar. 1955

Photogrammetric Office Review by (III): A. K. Heywood

Date: 8 April 1955

Elevations on Manuscript checked by (II) (III): A. K. Heywood

Date: 15 March 1955

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Camera (kind or source) (III): USC&GS TYPE "0" 6" Focal Length

PHOTOGRAPHS (III)					
Number	Date	Time	Scale	Stage of Tide	
7200 thru 7203	6/16/51	15:38	1:40,000	2.7	above MLLW
7262 thru 7263	6/17/51	13:80	"	4.8	" "
7184 thru 7188	6/16/51	15:08	"	2.9	" "

From Tables of Tides

Tide (III)

Di-urnal

Reference Station: Aberdeen, Wash
Subordinate Station: Bay City, Grays Harbor
Subordinate Station:

Ratio of Ranges	Mean Range	Spring Range
	7.8	9.9
.9	7.1	9.2

Washington Office Review by (IV):

Date:

Final Drafting by (IV): *Mary E. Taylor*

Date: 1-20-59

Drafting verified for reproduction by (IV):

Date:

Proof Edit by (IV):

Date:

Land Area (Sq. Statute Miles) (III): 39
Shoreline (More than 200 meters to opposite shore) (III): 26
Shoreline (Less than 200 meters to opposite shore) (III):
Control Leveling - Miles (II): 30 (Topo Levels)
Number of Triangulation Stations searched for (II): 25
Number of BMs searched for (II): 28
* Number of Recoverable Photo Stations established (III): 19
Number of Temporary Photo Hydro Stations established (III):

Recovered: 15 Identified: 12
Recovered: 26 Identified: 13

Remarks:

*Three positions of 1940 stations were verified during this survey in addition to this number.

FIELD INSPECTION REPORT
FOR
QUADRANGLE T-9521
Project Ph-62(49)

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2. Areal Description

This quadrangle lies entirely between Grays Harbor and Willapa Bay and extends inland from the coast. A large portion of the quadrangle is the rough, heavily wooded terrain typical of this area. A small part of South Bay, Grays Harbor is included in the north end of the quadrangle.

The land area falls into four distinctive topographic features described as follows:

Zone 1. is the shoreline zone and fronts on the ocean throughout the north-south dimension of the quadrangle and extends inland about $\frac{1}{2}$ mile. A gently sloping sand beach builds up to a ridge of sand dunes along the storm water line with an elevation of about 15 feet. Back of these dunes is a strip of low scattered dunes which, with some exceptions, are held more or less permanently by a thin cover of grass. Interspersed among the dunes are small brackish ponds and marshes. In some places there are small patches of stunted deciduous brush. Some variations are found in this zone such as the large area of higher dunes with a prominent grove of coniferous trees in the vicinity of Topographic Station FORT north of Grayland.

Zone 2 borders zone 1 on the east and extends inland about 1 mile. The west border of zone 2 is a pronounced sand ridge with elevation of from 15 to 30 feet. For the most part this ridge is held fast by grass cover with coniferous trees in some places. At a few places the dunes are bare shifting sand, moving generally eastward and encroaching on the developed area along State Highway 13A.

Easterly from the sand ridge is a low and generally flat area of numerous marshes and groves of mixed coniferous and deciduous trees often with a thick growth of jungle-like underbrush. Scotch Broom and similar thick flowering shrubbery is prevalent.

The central and southern portions of zone 2 are largely cleared, drained and made into cranberry bogs. The northerly portion of zone 2 is largely swamp heavily overgrown with mixed growth. The pattern of ancient sand ridges upon which the growth has established is clearly distinguishable.

Zone 3 is the tide flat area in South Bay and along Elk River. The area is only a few feet in elevation, is covered with grass

and interlaced with tide channels varying in width from a few inches to over 100 feet. South and west of Station DIKE the area has been diked off and a portion of this zone has been converted into productive land used mostly for cattle raising. Except for the channels the bay area is very shoal.

Zone 4 is the hilly zone in the eastern part of the quadrangle and includes most of the area of the quadrangle. The northeast corner of the quadrangle rises in gently rolling hills. Elsewhere the hills rise abruptly from the eastern border of zone 2. The higher elevations are very rugged with very detailed topography and elevations up to about 500 feet. Except in the recently logged off areas there is a dense growth of brush and second growth timber of mixed coniferous and deciduous types. Drainage is clearly defined. The eastern part of the area is drained largely by Andrews Creek and Elk River to the north into South Bay and by the headwaters of Cedar River to the south into Willapa Bay. There is some local drainage to the west into Zone 2.

The only land access to the quadrangle is State Highway 13A from Aberdeen. This highway enters the quadrangle on the east side of South Bay from T-9518, extends west, thence south along the west edge of zone 2 into T-9634. Two connecting highways extend north to Westport in T-9518.

Grayland is a small unincorporated community of several hundred people and is the largest community in the quadrangle.

Extending south from Grayland is an extensive area of cranberry bogs and portions of the area are rather thickly populated.

Grayland and the beach area has become a popular tourist area. One of the main supporting businesses of the area is the tourist trade. There is little or no fishing within the limits of the quadrangle but clam digging is a popular sport and commercial enterprise.

There is little or no logging in the area at present.

Cranberry growing is probably the most productive industry.

All products produced are processed, packed and marketed outside the area.

Some years ago a whaling station was established at Bay City. This plant was more recently a pilchard processing plant. The plant is still in existence but it is not in operation.

Field inspection was done in accordance with the project instructions and the Topographic Manual. None of the field inspection is considered substandard. No unusual methods were used.

There is complete photograph coverage on two different scales of photography. Field inspection was done on the 1:40,000 contact scale photography except for shoreline in South Bay, which is on the 1:24,000 contact scale photography. See Field Inspection Report for Quadrangle T-9518, Project Ph-62(49) for photo interpretation which also applies to this quadrangle.

Photograph tones on the 1:24,000 contact scale photography are about the same as tones on the 1:40,000 contact scale photography. An almost white tone indicates sand, bare earth, or cranberry bogs under a certain stage of cultivation. Mud flats and grass are a light gray tone while marsh is a darker gray. Coniferous trees are indicated by a dark mottled tone. Deciduous trees are much lighter. Newly logged areas have a light mottled tone with white streaks.

The field edit party should be alert for changes in highway location. Relocation of State Highway 13A including a new bridge over South Bay is proposed.

3. Horizontal Control

- (a) No supplemental control was established.
- (b) No datum adjustments were made by the field party and none are required.
- (c) All control was established by the Coast and Geodetic Survey.
- (d) All control required by the project instructions was identified. No specific stations were required for control of shoreline photographs in South Bay. It is believed a sufficient number of stations in that area were identified to control a separate shoreline plat of 1:10,000 scale photographs.
- (e) All known Coast and Geodetic Survey stations were searched for except undescribed 1911 stations of which there was no chance of recovery. Stations not recovered are as follows:

Bay City Bridge, light on north range marker, 1940
 Bay City Bridge, light on south range marker, 1940
 LAID, 1911
 LAND, 1926
 LAW, 1911
 MAC (U.S.E.), 1937
 Near Elk River, barn, north gable, 1940
 PILE, 1911
 POST, 1911
 TREE, 1911

LAND, 1926, was identified. See Recovery Note for condition of station.

4. Vertical Control

(a) All bench marks were established by the Coast and Geodetic Survey. All elevations are on the 1929 General Adjustment, Pacific Northwest Supplementary adjustment datum. No datum adjustments are required. All elevations are first-order. All known bench marks were searched for. No bench marks were established by this party.

List of bench marks recovered:

D 295	L 295
U 12	M 295
R.M. 2 KITE	R.M. 1 GRAY
R.M. 1 KITE	R.M. 2 GRAY
KITE	GRAY
R.M. 1 GUNVILLE	N 295
R.M. 2 GUNVILLE	P 295
GUNVILLE	Q 295
E 295	R.M. 1 FIRST
F 295	R.M. 2 FIRST
J 295	FIRST
LAST	R 295
K 295	S 295

Bench marks for which geographic positions are available were not identified on the photographs.

(b) Supplemental elevations were established by trig. leveling or spirit leveling from first-order bench marks or from T.B.M.'s established by this party. All vertical control points are on closed loops or on double run spur lines. A trig level line running east from Grayland to a junction with a line running south along the Elk River had a high closure. This line was run to establish points on the 1:24,000 contact scale photographs and not required on the 1:40,000 contact scale photographs. After the line was completed, it was discovered that the points established thereon were not required and no attempt was made to reduce the closure. The elevations established on this line are of some value and probably can be used for multiplex control. Elevations on points 2137 to 2145, inc. and 2160 are questionable and are not inked on the photographs. Elevations for each point were computed from each end of the line and both elevations are entered on the abstract.

(c) 70 designated level points were established as follows:

2101 to 2121, inc.
2124 to 2127, inc.
2129 to 2173, inc.

Excluded numbers were not established.

Points 2146, 2162 and 2168 were established on the high water line by measurement from photo points or other known points. They are not identified on the photographs.

(d) There was considerable confusion between the vertical control required on the two scales of photographs. Points were indicated on both scales of photography with some points apparently transferred from the 1:24,000 scale to 1:40,000 scale photographs. The photographs were examined to determine, if possible, what was intended. It is believed that more than the minimum of vertical control points were established, although some of them may be shifted slightly from the required points. Most of the difficulty, if any, in this respect will be in the north end of the quadrangle where the 1:24,000 scale photographs of T-9518 overlap two models into this quadrangle and similarly two models of the 1:40,000 scale photographs overlap into T-9518. In the overlap area points were established for both scales of photographs, some of which are identical and others not identified on both photographs but which can be used on both.

5. Contours and Drainage

Contouring is inapplicable.

The compiler should note the detailed topography in the clear logged off areas. Terrain in the adjacent wooded areas is similar to the clear areas.

Where drainage was field inspected it was indicated on the photographs. No attempt was made to field inspect all drainage. Drainage is clearly defined in the rough eastern portion of the quadrangle. In and around the cranberry bogs drainage is very intricate, but of little importance for mapping purposes. The main drain in this area is to the south into North Cove.

There are no features not obvious on the photographs except possibly the dunes along the ocean beach and another line of higher dunes generally parallel to and just west of State Highway 13A.

6. Woodland Cover

Woodland cover was classified in accordance with Photogrammetry Instructions No. 21 and the Topographic Manual. In zone 2, defined under side heading 2, woodland cover is largely very thick deciduous brush and trees with a scattering of coniferous trees. The largest stand of mostly coniferous trees in this zone is in the northwest corner of the quadrangle. There is considerable variation in tree heights. Low deciduous brush is up to 15 feet in height. Deciduous trees are from 25 to 50 feet. Coniferous trees are from 50 to 75 feet, although there is a fringe of coniferous trees along the west edge of zone 2 with heights not exceeding about 25 feet. Woodland cover in zone 4 is typical of the

area and varies from little or no deciduous brush in recently logged areas to higher deciduous trees growing to heights of 25 feet or more in about 10 years. Eventually natural coniferous reseedling will take place and about 25 years or less after logging coniferous trees predominate. There are no known stands of virgin timber in the quadrangle. Existing trees vary considerably in height with a gradual change in heights from valleys to ridges. Some stands of second growth timber ^{are} as well over 100 feet in height. Tree heights vary so greatly and gradually that estimates of tree heights would be of little or no value in contouring. Estimates of tree heights in thick timber where the sky is hardly visible are not reliable and would often be misleading. The only places tree heights could be measured are at the edges of open areas where the ground is visible on the photographs. It is thought that the multiplex operator can measure such trees heights better than can be done in the field. The compiler should not assume that tree heights are uniform even in small areas, but lacking more definite information, he should analyze the situation carefully using all available information and experience before contouring the area. At best, vertical displacement of contour over 100 feet can be expected. Some areas were logged off between the times of photography on the two scales of photographs. A study of these areas may be of value to the compiler in contouring wooded areas.

7. Shoreline and Alongshore Features

(a) The mean high-water line along the ocean beach was determined by leveling at several places from nearby bench marks. An elevation of 3.4 feet above mean sea level was established on the beach. Measurements to these points were made from horizontal control stations or from photopoints. These points when plotted on the manuscript will be on the mean high-water line. The mean high-water line was established in the same way except that it was done by plane table south from station BEACH 2 in T-9634 and north from Grays Harbor Light in T-9518. Between points the mean high-water line can be established by analogy. In general the mean high-water line thus established will be well outside the estimated mean high-water line.

The mean high-water line in South Bay has been indicated on the photographs. In the southern part of the bay and in Elk River the mean high-water line and the grass line coincide. At this line there is a vertical bank 1 to 2 feet high.

(b) The low water line is not visible on the photographs and was not defined. See Field Inspection Report for Quadrangle T-9518, Project Ph-62 (49).

(c) The foreshore on the ocean beach is a clean sand beach. The foreshore in South Bay is a very flat area of extensive mud

flats bare at low water. There are no rocks or boulders in the foreshore area.

(d) There are no bluffs or cliffs close to the shoreline. There is a prominent high bluff about 1 mile inland from the ocean beach from Grayland to the south limit of the quadrangle.

(e) The only pier is at the pilchard processing plant south of the bridge across South Bay.

(f) ^{*} There are no known submarine cables in the quadrangle.

A USN CABLE EXISTS ALONG BRIDGE OVER SOUTH BAY AREA

(g) Other structures are a highway bridge across South Bay at Bay City and numerous piles, dolphins, etc. Piles and dolphins were indicated on photographs or were located by theodolite cuts or sextant fix.

8. Offshore Features

There are no offshore rocks and other obstructions except piles, dolphins, etc. mentioned above.

9. Landmarks and Aids

(a) The only landmarks recommended are the ^{*}stack at the pilchard plant at Bay City, a tripod at WHITE (U.S.E.) and a tripod at GRAY (U.S.E.). All have been reported on Form 567.

* DESTROYED AID

(b) There are no specific interior landmarks.

(c) There are no aeronautical aids.

(d) All existing fixed aids to navigation were located. The only fixed aids are six range daybeacons at Bay City. All were located by theodolite cuts from triangulation stations. No observations were made to determine the azimuth of Bay City Range 1 except the theodolite location of the daybeacons. Sextant angles were observed at the front daybeacons for determination of azimuths of Bay City Ranges 2 and 3. All fixed aids were reported on Form 567.

(e) Location of floating aids was not required and none were located.

10. Boundaries, Monuments and Lines

Boundaries to be mapped in this quadrangle are the boundary of the Twin Harbors Beach State Park and the Grays Harbor - Pacific County boundary. See "Special Report on Boundaries - Part 1 - Project Ph-62 (49)".

Ten section corners were identified. See "Special Report on Land Lines - Part 1 - Project Ph-62 (49)".

11. Other Control

Twelve new recoverable topographic stations were established including six daybeacons at Bay City. Daybeacons were described before receipt of instructions to omit descriptions of daybeacons surrounded by water. All descriptions are submitted.

Twenty-eight 1940 recoverable topographic stations were searched for. Eight were recovered and identified, including one in T-9518 not reported for that quadrangle (JIM, 1940).

Recoverable topographic stations CHIM, 1940 and GREEN, 1940 were overlooked and were not searched for.

Recoverable topographic stations not listed on Form 567 are:

BM K 295	HOU, 1940
PINE	JIM, 1940 (T-9518)
FORT	PEAK, 1940
BARN, 1940	PETERSON, 1940
DEMPSEY, 1940	WEIGHT, 1940
HOP, 1940	

Photo-hydro stations were not required and none were established.

12. Other Interior Features

Roads were classified in accordance with the Topographic Manual. Some abandoned railroad grades have been classified road 8 as they form the only existing access routes. At places these grades are impassable even to a foot traveler because bridges are out and they are choked with brush. Access to logging railroad up Andrews Creek was by boat from South Bay and no direct connection is made with other roads. Preliminary surveys have been made for a relocation of State Highway 13A throughout most of its length in this quadrangle.

Buildings were classified in accordance with Photogrammetry Instructions No. 29 and the Topographic Manual.

The only bridge over navigable waters is State Highway 13A bridge at Bay City. The bascule span of this bridge has a horizontal clearance of 102 feet and had a vertical clearance closed of 15 feet at 1030 a.m. PST on 27 May 1952.* A new bridge reported to be south of the present one is included in the proposed relocation of the highway mentioned above.

NEW BRIDGE BUILT AXL

An overhead cable crossing parallels the highway bridge on the north side. The height over the channel was determined by theodolite observations from triangulation stations. The height is 88.3 feet above MSL or 85 feet above MHW.

There are no airports or landing fields.

13. Geographic Names

See "Special Report on Investigation of Geographic Names - Project Ph-62 (49) - Parts 1 and 2"

14. Special Reports and Supplemental Data

Special Report on Investigation of Geographic Names - Project Ph-62(49) - Parts 1 and 2 forwarded 20 October 1952.

Special Report on Land Lines - Part 1 - Project Ph-62(49) forwarded 15 December 1952.

Special Report on Boundaries - Part 1 - Project Ph-62(49) forwarded 19 December 1952.

Geodetic records (triangulation and leveling) were forwarded to the Washington Office on two transmitting letters dated 17 December 1952. Carbon copies of Lists of Directions, Descriptions and Geographic Positions are included with photogrammetric records.

Observations of fourth-order directions, observations of zenith distances, lists of fourth-order directions and related computations for quadrangles T-9518 to T-9521 and T-9633 to T-9635 are grouped together and include some data pertaining to this quadrangle.

Photogrammetric Records are forwarded with this report.

Respectfully submitted,

Charles W. Clark

Charles W. Clark
Lt. Comdr. USC&G Survey
Chief of Party.

COMPILATION REPORT
Project Ph-62
Survey T-9521

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Photogrammetric Plot Report - Bound with Descriptive Report for T-9637.

31. DELINEATION

All detail was compiled by the multiplex instrument except the shoreline which was compiled by the detail point method.

Field inspection in general was fair. It was done on the 1:10,000 scale photography (as per instructions), yet the manuscript scale was 1:17,000. Consequently, the proper scale prints had to have field information transferred to them before their orientation under the manuscript. In the delineation of buildings this proved difficult since there were a great number of buildings to be shown. Each had to be sought out; its classification noted, whether it was to be deleted etc., and inked on the 1:17,000 scale prints before orientation beneath the manuscript. Buildings were found to be deleted in one photograph, then shown in a red square on the adjacent photo; as on photographs 7185-7186. An unusual number of buildings were deleted, somewhat in excess of 50%. Buildings shown should be carefully checked during field edit.

Refer to paragraph No. 35 as to adequacy of shoreline inspection.

32. CONTROL

Refer to item No. 32 in Descriptive Report for T-9633.

33. SUPPLEMENTAL DATA

A blue on white copy of "Twin Harbors Beach State Park" letter size indexed as "D-1".

Land Plats:

Township 16N Range 12W.
Township 16N Range 11W.
Township 15N Range 12W.
Township 15N Range 11W.

34. CONTOURS AND DRAINAGE

Refer to Paragraph No. 6, Field Inspection Report where contours can be expected to be in error 100ft.

The first two paragraphs of item No. 34, Descriptive Report for T-9633, are also applicable to this survey. Photographs 7200 thru 7203 lie along the junction of these two manuscripts.

* Portions of the 20' contour east of Heather is incomplete due to heavy woods.

* COMPLETED BY FIELD EDIT.

Gaps exist in the north along Beardslee Slough and in the south below the North Fork of Cedar River. These areas could not be compiled due to cloud formations.

COMPLETED BY BALTO. AFTER FIELD EDIT.
CONTOURS SKETCHED.

AKA 20

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35. SHORELINE AND ALONGSHORE AREAS

Refer to paragraph No. 7, Field Inspection Report. In the area along the outer coast from the south limits of Grayland, the field inspector gave traverse points approximately every mile. The area between was interpreted by this office. From Grayland north to the edge of the survey, no inspection was found. This area was also office interpreted. The inspected shoreline in South Bay was "spotty". The apparent shoreline is marsh area and was inspected only in obvious places. All inspection (as per instructions) was shown on the 1:10,000 scale photography and had to be transferred to the 1:17,000 scale photographs; the scale of this survey. These were taken a year later and added to the difficulty. Since hydrography is to be accomplished in this area, it is felt a 1:10,000 shoreline manuscript N/2 would have better served the need.

* The MHWL will require an extensive check, especially in areas of office interpretation.

36. OFFSHORE DETAILS

Data complete.

* NO FIELD EDIT OF THIS MHWL WAS MADE. IT WAS FELT DURING THE PREPARATION OF THIS SHEET FOR FIELD EDIT BY MR. J. NEAL THAT THE OFFICE INTERPRETATION OF THE MHWL WAS ADEQUATE AND NO FURTHER FIELD EDIT WAS NECESSARY

37. LANDMARKS AND AIDS

Three landmarks were recommended and located on this survey.

Six aids were also established.

AKK
5

38. CONTROL FOR FUTURE SURVEYS

Twelve Forms 524 are submitted with this report for new topographic stations.

Forms 524 for seven previously established stations with either verified or new positions are also submitted. Attached to these forms are the original Forms 524.

A list including both new and previously established stations has been prepared and included in paragraph No. 49.

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39. JUNCTIONS

Junction has been made to the north with Survey T-9518; to the south with Survey T-9634; and the east with Survey T-9633. To the west is water.

40. HORIZONTAL AND VERTICAL ACCURACY

Refer to paragraph No. 32 and No. 33 of the Descriptive Report for T-9633.

41. BOUNDARIES

Except for the area along the coast recovered section corners were sparse. Heavy trees inhibited the field inspection from recovering more.

Special attention should be given by the Field Edit party to verifying the azimuth of the Grays Harbor, Pacific County line.

46. COMPARISON WITH EXISTING MAPS

Comparison has been made with AMS Quadrangle Grayland, scale 1:62,500, Tactical Map published 1939.

47. COMPARISON WITH NAUTICAL CHARTS

Chart 6002, scale 180,789 at Lat. 47° 00', published July 1942 (10 Edition), 4/21/52.

Chart 6195, scale 1:40,000, published July 1949 (52 Edition), 4/21/52.

Items to be applied to Nautical Charts immediately: None.

Items to be carried forward: None

Approved and forwarded

E. H. Kirson
E. H. Kirson, Comdr. USCGS
Officer in Charge
Baltimore Photo. Office

Respectfully submitted
12 April 1955

A. K. Heywood
A. K. Heywood
Carto. (Photo.)

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LESS THAN 3rd ORDER STATIONS LOCATED BY
TRIANGULATION METHODS

The List of Directions for these stations is bound in a special cahier entitled "MISCELLANEOUS DIRECTIONS", Project Ph-62, which will be forwarded to the Washington office upon completion of this project.

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FIELD EDIT REPORT

Project 24120

Sheets T-9521, T-9633 and T-9634

23 November 1956

51. Methods:

Field edit was done in accordance with Letter: Instructions for Field Edit, Project Ph-62, dated 1 June 1955, and notes to the field editor on the discrepancy prints.

All cultural features were edited. Additions were made with red ink and deletions with green ink. Comparison with the hydrographic survey completed this year should be made for mean low low-water line and offshore structures, namely piling. See Section 52, Paragraphs a and d for shoreline changes in South Bay.

No extensive effort to recover section corners was made. All section corners that were suggested for recovery on the discrepancy prints were searched for. A summary of section corner information follows:

T-9521

<u>Section Corner</u>	<u>Information</u>
22,23,27,26 T16N R11W	Located by planetable on Field Edit Sheet No. 1
27,26,34,35 T16N R11W	Recovered. Could not be identified on photograph and inasmuch as the adjacent corner to the north was located, it was considered impractical to locate by planetable because of the line clearing that would have been necessary.
21,22,28,27 T15N R11W 28,27,33,34 T15N R11W	Both these corners were searched for but not recovered.

T-9634

No section corner information

T-9633

(cont. next page)

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T-9633

<u>Section Corner</u>	<u>Information</u>
22,23,27,26 T16N R10W	Recovered, identified on Photo 51 O 7248 (1:17,000)
15,14,22,23 T15N R10W	Doubtful recovery, identified on Photo 51 O 7246 (1:17,000)
Point on line between Sections 22 and 27 T15N R10W	Recovered and identified on Photo 51 O 7246 (1:17,000)
22,23,27,26 T15N R10W 27,26,34,35 T15N R10W	Both these corners searched for but not recovered.

Inasmuch as Paragraph 3 of Notes to Field Editor, T-9521 states: "Field edit of ocean shoreline may be omitted. This shoreline will be mapped as of 1952 (date of field inspection) with further field check", no attempt was made to edit the ocean shoreline on T-9521 and T-9634. There is no ocean shoreline on T-9633.

A legend of colored inks and symbols used during field edit is found on Field Edit Sheet No. 1, Sheet T-9521.

Notes to the field editor have been answered on the discrepancy prints on which they appear or cross - referenced to the proper source of information.

Field edit information has been noted on the discrepancy prints, Field Edit Sheet No. 1 for each of the sheets included in this report, on supplementary data listed in Section 56 of this report and on the following photographs:

<u>Photo</u>	<u>Information</u>
51 O 7183 (contact)	Swamp limits and terminal of submarine cable just east of Cape Shoalwater
✓ 51 O 7184 (contact)	Trail and photo point for locating Section Corner 16,15,21,22 T15N R11W. See reverse side of photo.
✓ 51 O 7185 (contact)	Points on section lines
✓ 51 O 7203 (contact)	Point on section line 28/27
51 O 7204 (contact)	Additional shoreline inspection northwest of Tokeland

9521 19

<u>Photo</u>	<u>Information</u>
✓ 51 0 7263 (contact)	Indication of drainage, Elk River and tributary streams and trail on west side of road 7
50 0 1529 (contact)	Swamp limits and drainage
51 0 7246(1:17,000)	Section line information
51 0 7248 (1:17,000)	Section line information
✓ 50 0 1524 (1:10,000)	Swamp limits
✓ 50 0 1525 (1:10,000)	Verification and reidentification of Bench Mark K 295
✓ 50 0 1526 (1:10,000)	Drainage, north side of Grayland

Barometric elevations in the area just northeast of Grayland (T-9521) were established by the leap-frog method. The single-base method was used to establish all other barometric elevations in T-9521 and T-9633. The furthest distance from the base that elevations were established was approximately one and one-half miles. The single-base method was used because of the time element involved. Denseness of brush hindered travel to the extent that several of the elevations could not have been established within a days time using the leap-frog method.

52. Adequacy of Compilation:

It is believed that compilation of these sheets with the information furnished was adequate. Attention is directed to the following changes and verifications made during field edit:

✓ T-9521

a. Secondary Highway No. 13-A has been relocated at Bay City and a new bridge constructed. The road was located on Field Edit Sheet No. 1 by planetable methods and drawing of Secondary State Highway No. 13-A, South Bay Bridge Approaches, which is submitted with the field edit data for Sheet T-9521. Bridge clearances were obtained from the Washington State Highway Commission. This is the only highway relocation within the area of Sheet T-9521. The old bridge structure, the west approach and part of the east approach were removed at the time of field edit and the removal of the east approach was still in progress. The entire old structure has been deleted from the map.

✓ b. Terminals of submarine and overhead cables across South Bay have been located by planetable on Field Edit Sheet No. 1.

✓ c. Note shoreline change around the bridge approach fills at the

9521 20

South Bay Bridge.

d. The structures on the pier on the east side of South Bay at Bay City have been razed and the west end of the pier is in ruin. The structure has been classified as "pier in ruin".

e. The following triangulation and topographic stations in the vicinity of Bay City have been destroyed:

- ✓ Hop 1940
- ✓ Bay City Range 2 Front Daybeacon 1952
- ✓ Bay City Range 3 Front Daybeacon 1952
- ✓ Weight 1940
- ✓ Bay City Pilchard Plant Stack 1952

Recovery notes for these stations are submitted with the field edit data for this sheet.

f. The boundary of Twin Harbors Beach State Park is indicated on the park drawing. The park includes Parcels A, B and F on the east side of Highway 13-A and Government lot 3 (Parcel D) and Blocks 1, 2, 3 and 4 on the west side of the highway. Blocks A and B which join the west side of Blocks 3 and 4 are not included in the park at the time of field edit. See Section 56, Paragraph "a" of this report.

g. Bench Mark K 295 was reidentified by the detail point method. On the original control station identification card, the angle at the substitute station from Station PINE 952 to BM K 295 is $312^{\circ} 12' 01''$, not $12^{\circ} 12' 01''$ as it appears to be at first glance. Also the distance should be 32.19 meters, 105.6 feet. The original substitute station was not recovered and the angles and distances were not checked by the field edit unit, but the direct identification in 1952 on the 1:10,000 scale print of Photograph 50 0 1525 was verified by measurements to detail points which have been indicated on the photograph with purple ink. See note on Photo 1525 and control station identification card for BM K 295 dated 10/1/56.

h. TRIPOD 1952 (approximate latitude $46^{\circ} 46.15'$, longitude $124^{\circ} 05.5'$) has been destroyed. The present tripod was located by plane-table on Field Edit Sheet No. 1 and designated as TRIPOD 1956. See Form 524 for TRIPOD 1952 and TRIPOD 1956.

j. The elevation indicated with red pencil at approximate latitude $46^{\circ} 47.3'$, longitude $124^{\circ} 00.3'$ was not checked. The field edit unit attempted to reach the point but denseness of underbrush slowed travel to the extent that the party had to turn back before reaching it in order to get out of the woods before dark. It was considered impractical to make a second attempt.

k. Numerous buildings have been added. See Field Edit Sheet No. 1, T-9521 for additions and deletions of buildings.

9521 21

T-9634

- a. A new road 7 to Willapa Bay Light has been added. See Field Edit Sheet No. 1
- b. Note arrangement of buildings at road intersection approximately 1500 feet south of BM U 295. See Field Edit Sheet No. 1.
- c. Several buildings have been added to the map. See Field Edit Sheet No. 1, T-9634, for additions and Deletions.

T-9633

- a. The 400 top indicated with red pencil at approximate latitude $46^{\circ} 50.0'$ and longitude $123^{\circ} 56.4'$ was not checked as the field edit unit could not reach the point and get out of the woods before dark on the same day.
- b. Note addition of buildings at approximate Latitude $46^{\circ} 50'$ Longitude $123^{\circ} 58.8'$ and additions and deletions of buildings along the Johns River Road.

53. Map Accuracy:

No horizontal accuracy test was made.

No vertical accuracy test was required and none was made. The 20-foot contour was added where indicated on the discrepancy prints and contours along the beach were checked. Some 20-foot contours were added along the beach on Sheet T-9521.

Barometric elevations were established where it was indicated that checks should be made in the wooded areas. These elevations indicated that the AMS elevations for the same points are incorrect. See barometric elevations indicated with red ink on the Field Edit Sheets.

The planetable was used to check elevations in the vicinity of Station LARKIN 1939, Sheet T-9634. The elevation of this station published in the list of geographic positions (unadjusted field) was used.

54. Recommendations:

The only sheets furnished for T-9521 and T-9633 were at the scale of 1:17,000. This is a very inconvenient scale to use on the planetable, as each stadia distance must be multiplied by a factor before it can be plotted on the sheet with a 1:10,000 or 1:20,000 scale. It is recommended that sheets for planetable use be at the scale of either 1:10,000 or 1:20,000.

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55. Examination of Proof Copy:

The following named persons have agreed to examine a proof copy of the map if it should be sent to them:

Mr. F. T. Workman
Bay City, Washington

Mr. Prosport Ostroski
c/o West Tacoma Newsprint
400 East First Street
Cosmopolis, Washington

Mr. Workman has been a resident of the area for approximately thirty five years.

Mr. Ostroski has been in the area six years and is at present an engineer with West Tacoma Newsprint.

56. Supplemental Data:


a. Drawing of Twin Harbors Beach State Park with park boundary indicated thereon with red pencil.

b. Ratio print of drawing - Secondary State Highway No. 13-A, South Bay Bridge Approaches.

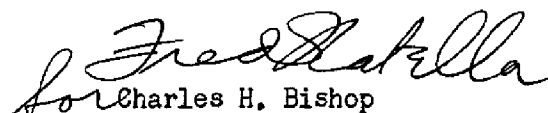
57. Current Hydrographic Surveys:

That part of the hydrographic survey of Grays Harbor completed by the Coast and Geodetic Survey in September 1956 that is within the area of Sheet T-9521 (South Bay) should be searched for piling or other offshore detail that may have been missed by the field editor.

Approved:


Fred Natella
Comdr., C&G Survey
Officer-in-Charge

Respectfully submitted:


for Charles H. Bishop
Cartographer

9521 23

REVIEW REPORT
TOPOGRAPHIC
27 December 1957

61. General Statement

See Summary

62. Comparison with Registered Topographic Surveys

H-334	1:221,360	1852
1701	1:20,000	1886
3155	1:10,000	1911
4254	1:20,000	1926
6806	1:10,000	1940

Manuscript T-9521 super^scedes all of the above surveys in common areas as source material for charts.

63. Comparison with Maps of Other Agencies

AMS Grayland 1:62,500, Tactical Map published 1939. Contour interval 20'.

64. Comparison with Contemporary Hydrographic Surveys

Comparison was made with B. P. 54397. The only record available during review. Differences were investigated and resolved either by features deleted from the manuscript disproved by the hydrographic survey or a letter "Notes to Verifier" to the Chart Division.

65. Comparison with Nautical Charts

Paragraphs 1 and 2 of Review Report T-9518 are applicable to this report.

Comparison was made with Chart 6195 53 Edition, revised 5/27/57.

66. Adequacy of Results and Future Surveys

This map complies with instructions.

It does not meet the National Standards of Map Accuracy *for vertical accuracy. HLB*

Clouds and the lack of sufficient vertical control rendered the accuracy of contours in this quadrangle sub-standard.

together with heavy woods cover

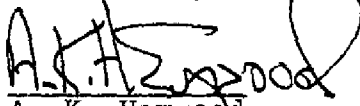
9521

24

Refer to item 66 Review Report for T-9514 and a report to Chief, Photogrammetry Division, bound with Descriptive Report T-9516.

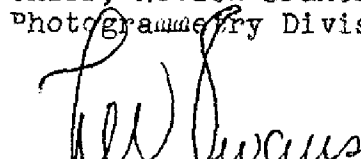
The gaps existing during field edit, mentioned under item 34 of the Compilation Report, were sketched subsequent to field completion by the Baltimore Office.


Reviewed by

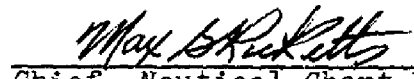

A. K. Heywood


Approved


Chief, Review Branch
Photogrammetry Division

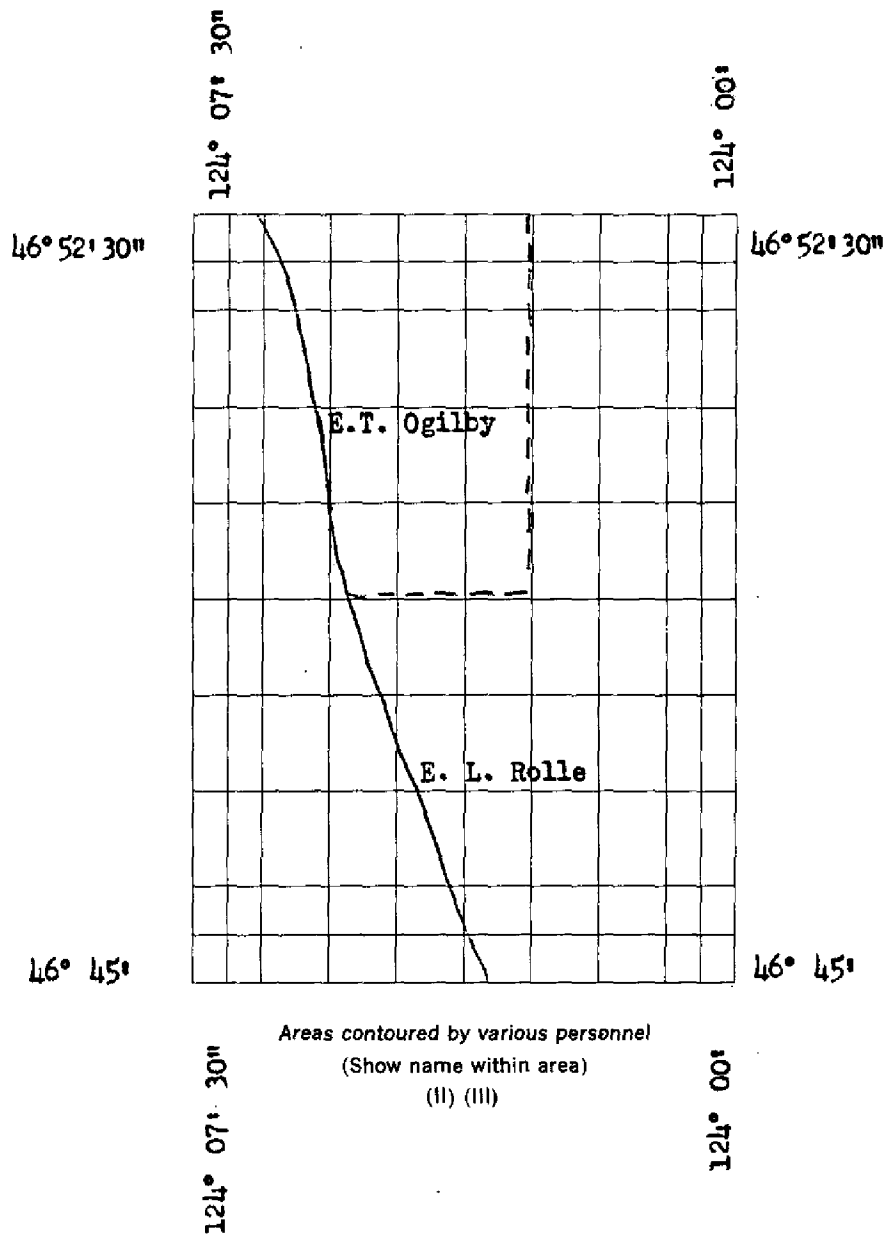

Chief, Photogrammetry Div.

22 July 59 


Chief, Nautical Chart Branch
Charts Division


Chief, Coastal Surveys

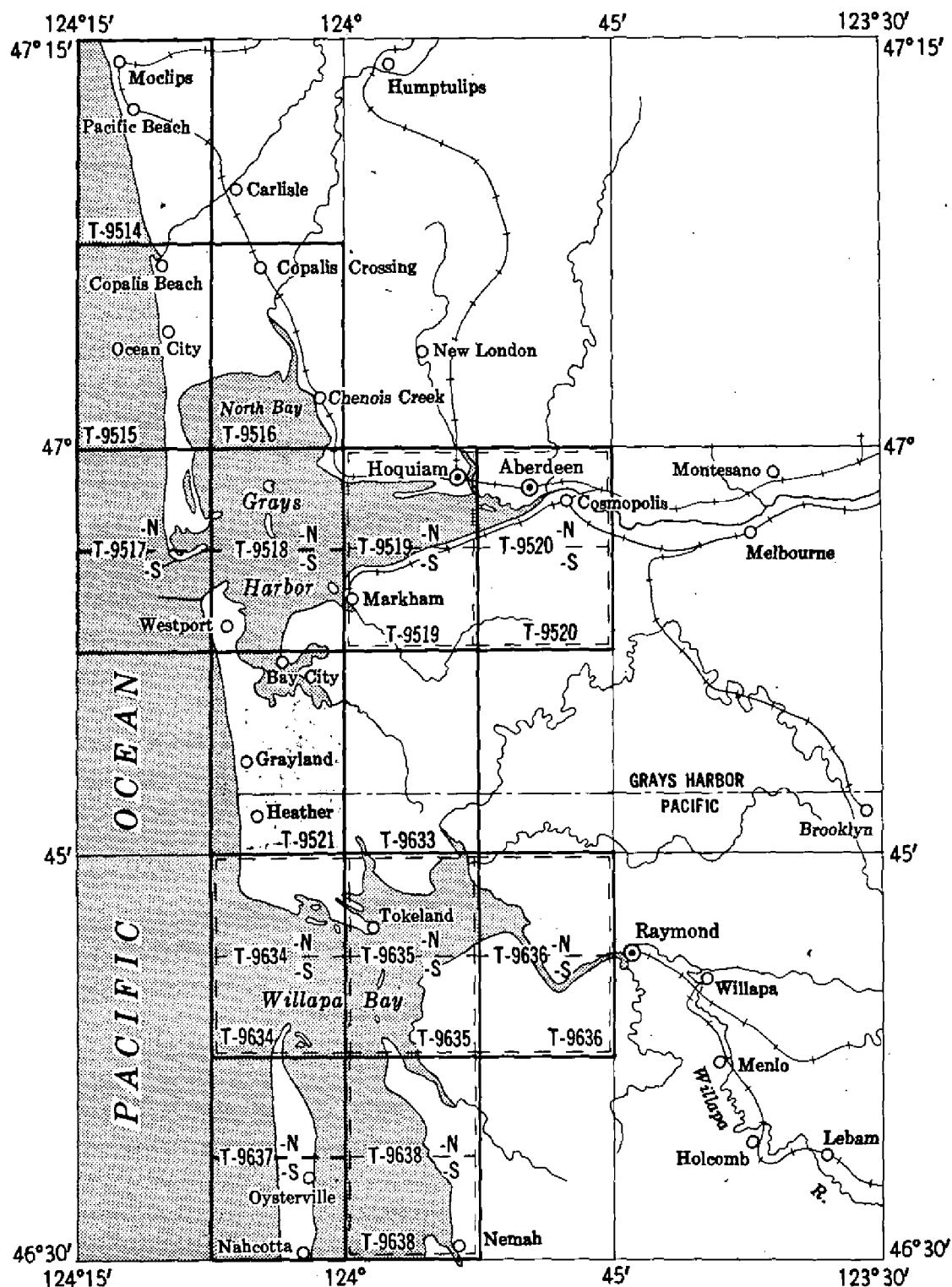
T9521



TOPOGRAPHIC AND SHORELINE MAPPING PROJECT PH-62 (49)

WASHINGTON, Grays Harbor - Willapa Bay

Compilation scales 1:10,000 and 1:20,000



TOPOGRAPHIC MAPS: T-9514, T-9515, T-9516 T-9519, T-9520, T-9521, T-9633 to T-9636 and T-9638, (scale 1:20,000),
 T-9517-N, T-9517-S, T-9518-N, T-9518-S, T-9637-N, T-9637-S, (scale 1:10,000),
 SHORELINE SURVEYS: T-9519-N, T-9519-S, T-9520-N, T-9634-N, T-9634-S,
 T-9635-N, T-9635-S, T-9636-N, T-9636-S, T-9638-N, T-9638-S, scale 1:10,000,

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
DESCRIPTIVE REPORT
CONTROL RECORD

MAP T-9521

PROJECT NO. Ph-62(49)

SCALE OF MAP 1:17,000

SCALE FACTOR 1.000

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR ψ -COORDINATE LONGITUDE OR λ -COORDINATE		DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS		DATUM CORRECTION	N.A. 1927-DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS		FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS	
			°	'	°	'		FORWARD	(BACK)	FORWARD	(BACK)
ANDREWS, 1940	G-5735 p. 734	N.A. 1927	46	50	22.241			686.8	(1166.0)		
			124	01	05.403			114.5	(1157.0)		
BEARDS, 1940	G-5735 p. 743	"	46	52	03.03			93.6	(1759.2)		
			124	02	35.09			743.2	(527.6)		
BERT, 1940	G-5735 p. 733	"	46	50	39.382			1216.1	(636.7)		
			124	04	03.846			81.5	(1189.9)		
DIKE, 1940	G-5735 p. 733	"	46	50	34.430			1063.2	(789.6)		
			124	04	29.340			621.7	(649.7)		
CEDAR, 1940	G-5735 p. 734	"	46	50	28.742			887.6	(965.2)		
			124	00	02.880			61.0	(1210.4)		
ELK, 1940	G-5735 p. 734	"	46	50	45.188			1395.4	(457.4)		
			124	00	59.333			1257.1	(14.2)		
FIRST, 1926	G-6687 p. 1024	"	46	46	38.991			1204.0	(648.8)		
			124	05	28.104			596.2	(676.8)		
GRAY, 1926	G-6687 p. 1024	"	46	48	41.171			1271.4	(581.4)		
			124	05	44.471			942.8	(329.3)		
GUNVILLE, 1940	G-5735 p. 733	"	46	51	42.903			1324.8	(528.0)		
			124	04	18.753			397.2	(873.7)		
ISLAND, 1940	G-5735 p. 733	"	46	51	05.907			182.4	(1670.4)		
			124	03	19.353			410.0	(861.2)		
KITE, 1939	G-8735 p. 733	"	46	51	47.133			1455.5	(397.3)		
			124	03	38.281			810.8	(460.9)		
LAST, 1926	G-6687 p. 1024	"	46	51	49.415			1525.9	(326.9)		
			124	06	48.096			1018.7	(252.2)		

1 INCH = 3048006 METER

COMPUTED BY: A. K. Heywood

DATE 6 April 1953

CHECKED BY: E. H. Taylor

DATE 6 April 1953

CONM-DC-57843

MAP T-9521

PROJECT NO. Ph-62(49)

SCALE OF MAP.....1:17,000.

SCALE FACTOR 1.000

[illegible]

1 FT. = .3048006 METER

COMPUTED BY A. K. Heywood.

DATE 18 March 1955

CHECKED BY: D. M. Brant

DATE 18 March 1955

COMM-DC-57843

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T-9521

PROJECT NO. Ph-62(49).

SCALE OF MAP 1:17,000.

SCALE FACTOR 1.000

[illegible]

1 FT. = 3048006 METER

D. M. Brant

DATE:

29 September 1953

CHECKED BY: E. H. Taylor

DATE 30 Sept. 1953

COMM-DC-57843

MAP T. 9521

PROJECT NO. Ph-62(49)

SCALE OF MAP 1:17,000

SCALE FACTOR 1.000

[illegible]

1 FT. = 3048006 METER

COMPUTED BY: **D. M. Brant**

DATE: 29 September 1953

CHECKED BY: **E. H. Taylor**

DATE _____

30 September 1953

COMM-DC-57845

SCALE FACTOR 1.000

1 FT = .3048006 METER
COMPUTED BY: D. M. Brant
DATE 29 September 1953
CHECKED BY: E. H. Taylor
DATE 30 September 1953
COMM. DC. 5784.

PHOTOGRAMMETRIC OFFICE REVIEW

T-9521

1. Projection and grids ☒ 2. Title ☒ 3. Manuscript numbers ☒ 4. Manuscript size ☒

CONTROL STATIONS

5. Horizontal control stations of third-order or higher accuracy ☒ 6. Recoverable horizontal stations of less than third-order accuracy (topographic stations) ☒ 7. Photo hydro stations ☒ 8. Bench marks ☒
9. Plotting of sextant fixes ☒ 10. Photogrammetric plot report ☒ 11. Detail points ☒

ALONGSHORE AREAS

(Nautical Chart Data)

12. Shoreline ☒ 13. Low-water line ☒ 14. Rocks, shoals, etc. ☒ 15. Bridges ☒ 16. Aids to navigation ☒ 17. Landmarks ☒ 18. Other alongshore physical features ☒ 19. Other along-shore cultural features ☒

PHYSICAL FEATURES

20. Water features ☒ 21. Natural ground cover ☒ 22. Planetable contours ☒ 23. Stereoscopic instrument contours ☒ 24. Contours in general ☒ 25. Spot elevations ☒ 26. Other physical features ☒

CULTURAL FEATURES

27. Roads ☒ 28. Buildings ☒ 29. Railroads ☒ 30. Other cultural features ☒

BOUNDARIES

31. Boundary lines ☒ 32. Public land lines ☒

MISCELLANEOUS

33. Geographic names ☒ 34. Junctions ☒ 35. Legibility of the manuscript ☒ 36. Discrepancy overlay ☒ 37. Descriptive Report ☒ 38. Field inspection photographs ☒ 39. Forms ☒
40. AK Hengsoo Henry P. Eicher
Reviewer Supervisor, Review Section or Unit

41. Remarks (see attached sheet)

FIELD COMPLETION ADDITIONS AND CORRECTIONS TO THE MANUSCRIPT

42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The manuscript is now complete except as noted under item 43.

J. C. Fichter
CompilerHenry P. Eicher
Supervisor

43. Remarks:

M-2623-12

48. GEOGRAPHIC NAMES

Andrews Cr
Alexson Rd

Barlow Cr
Bay City
Beardslee Slough

Cohasset
Cohasset Lake Cranberry Rd

Elk R
Evergreen Rd

Gauld Rd
Grayland
Grays Harbor Co

Heather
Hunt Club Rd

Jacobsen Rd

Laidlaw I
Larkin Rd
Logan Rd
Lundgren Rd

Mallard Slough

New Westport Co Rd
North Fork Cedar R
N P Cranberry Rd ?

Pacific County
Pacific County Drainage Ditch No. 1
Pacific Ocean
Pacific Road

Redding Rd
Roberts Farm

Smith-Anderson Rd
South Bay

Twin Harbors Beach State Park

Udell Hansen Rd

Washington 13A
West Fork Andrews Cr

Names approved
8-23-51
L. Heck 24

49. NOTES FOR THE HYDROGRAPHER

Recoverable topographic stations useful for hydrography are as follows:

TRIPOD, 1952
FORT, 1952
PINE, 1952
K 295, 1952
TRIPOD, 1952

WEIGHT, 1940
HOP, 1940
PETERSON, 1940
DEMPSEY (1940), 1952
PEAK (1940), 1952

BARN (1940), 1952

HOV (1940), 1952

BAY CITY RANGE 1 FRONT DYBN, 1952

" " " 1 REAR " "

" " " 2 FRONT " "

" " " 2 REAR " "

" " " 3 FRONT " "

" " " 3 REAR " "

BAY CITY, PILCHARD PLANT, STACK, 1952

Topographic stations which were not recovered but whose positions are shown on the manuscript are listed below:

SHAKE, 1940
BURNT, 1940
ALL, 1940
BOLE, 1940
FENCE, 1940

PIPE, 1940
MILL, 1940
DUCK, 1940
PRONG, 1940
ROD, 1940

PETE, 1940
POLE, 1940
LEY, 1940
LUMP, 1940
DONE, 1940

ROT, 1940
HIGH, 1940
GAME, 1940
LINE, 1940
KARL, 1940

NONFLUENT/ADBS/OR LANDMARKS FOR CHARTS

Baltimore, Maryland

21 March 1955

I recommend that the following objects which ~~have~~ *(have not)* been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by

E. H. Kirsch

Chief of Party.

[illegible]

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and *nonfloating*

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

~~TO BE CHARTED~~
TO BE DELETED

STRIKE OUT ONE

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

Washington D. C. Dec. 22 1957

I recommend that the following objects which have ~~(been inspected)~~ been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by A. K. Heywood

L. W. Swanson

Chief of Party.

[illegible]

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and *nonfloating aids* to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.

*** TABULATE SECONDS AND METERS**

Comm-DC 61327

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

~~TO BE CHARTED~~
~~TO BE DELETED~~

STRIKE OUT ONE

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

Washington, D. C. Dec. 22, 1957

BE DELETED]
I recommend that the following objects which have ~~(none)~~ been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by A. K. Heywood

L. W. Swanson

Chief of Party.

[illegible]

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and *nonfloating* aids to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.

* TABULATE SECONDS AND METERS

Comm-DC 61327

NAUTICAL CHARTS BRANCH

SURVEY NO. T-9521

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.