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Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*
Field No. *3297* Office No. *3297A*

LOCALITY

State *Washington*
General locality *Willapa Bay*
Locality _____

1941

CHIEF OF PARTY
R. B. Denslow

LIBRARY & ARCHIVES

DATE _____

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C. & G. SURVEY,
LIBRARY AND ARCHIVES
SEP 1 1911
Acc. No. ..

Hyd. 3297 & 3297^a.

Descriptive Report

to accompany

Hydrographic Sheet of

Willapa Bay, Wash.

June and July, 1911.

Scale 1:20000

Tide Gauge, Toke Point.

R. B. Derickson, Asst., Comdg. J. M. Coleman, Mate,

Chief of Party.

Hydrographer.

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RGD

WILLAPA BAY
WASHINGTON

HYDROGRAPHIC RESURVEY
FROM JUNE 1ST, 1911, TO JULY 29TH, 1911

STEAMER "GIEDNEY"
R. B. DERICKSON, ASST. COMMANDING.

SCALE 1:20,000

TIDE STATION: TOKE POINT

Soundings plotted in feet.

C
TABLES OF STATISTICS COULD NOT BE
FURNISHED, AS THE RECORDS WERE
FORWARDED TO WASHINGTON, IMMEDIATELY
ON COMPLETION.

REPORT TO ACCOMPANY HYDROGRAPHIC SHEET AT THE
ENTRANCE TO WILLAPA BAY, WASHINGTON. EXECUTED IN JUNE
AND JULY 1911.

Work was commenced at Willapa Bay on May 10, 1911, by a party sent out from the Str. GEDNEY, Executive Maupin being in charge. On May 28 the GEDNEY arrived at Toke Point. Until June 6 the work was all preparatory:- building signals, doing triangulation, making boat sheets, etc. On June 6 the first sounding was done, and from then on until July 27, when the work was finished, sounding was done every day that the weather permitted. About half the work, including that in the main entrance channel, on the bar, and over the approaches to the bar, was done from the ship; most of the rest, including that in the southern arm of the bay and in the western arm above its junction with the southern arm, was done from Launch No. 27. Some work along the edges of the breakers on either side of the entrance, was done from the whaleboat, and a little work in shallow water inside was done from the dinghy. On the sheet, the ship's work is shown by position figures in red; the whaleboat work in green; the launch work in blue; and the dinghy work in orange; except a little work done by the launch party from time to time, which is in violet. The work is plotted on two sheets, a small one having been necessary to carry the work up the eastern arm of the bay, beyond Toke Point.

The shore line for the area covered by the larger sheet

is shown on the topographic sheet. On the small sheet the high water line has not changed, and the low water line was sketched in by the hydrographic party and is shown on the smooth sheet.

Extensive changes in the character of the entrance may be noted. The channel seems to be working to the Northward, and at the same time to be straightening itself. "Middle Sands" have disappeared. North Cove has shoaled so that it can be entered only with difficulty by small boats at high water. Usually it breaks across the entrance and with ebb tide overfalls form between buoy No.3 and signal "Cape". Certain shoal spots shown on the old chart near Toke Point and to the eastward of the South Spit, have disappeared.

Great difficulty was experienced in getting shoal soundings about the entrance. The normal state of the sea is such that it breaks in from 2 to 3 fathoms, and dangerous currents and rips made it impossible to run a boat close to the breakers except in calm weather and at slack water. Seeing was also usually difficult; there usually being either a haze, or else clouds of sand blown by the wind, to obscure the signals.

At the beginning, in order to get the work started, soundings were taken whenever the vessel could safely cross the bar, and some lines allowance had to be made for the heavy swell; and at times it was with much difficulty that the leadsman could get the correct up and down cast. In this instance notes were made in the sounding records sufficient to give the proper correction.

Under ordinary weather conditions, there are heavy breakers over a small area (200 to 300 m. in dia.) 800 m. N x W (mag.) from the "Fairway" buoy (V S:-can), and over another small area 3200 m. S x E (mag.) of No.2 (red nun) buoy, and 3400 m. S E (mag.) of the "Midchannel" buoy (V S:-nun). With the usual strong N W winds in the summer time heavy tide rips form with the ebb tide in the vicinity of the 2 - 3 fathom shoals N X W of the Fairway buoy, These tide rips look like heavy breakers and extend almost to the end of the North Spit; they disappear with the flood current. The sounding lines covering this area were extended from the 12 - 15 fathom curve outside to the 4 fathom curve, or as safely permitted in the vicinity of North Spit. The south and west side of the North Spit is very steep to, as in some places soundings of 7 and 8 fathoms were taken alongside of breakers. The same condition is shown along the north side of the shoal south-east of buoy No.6. In moderate weather a continuous line of breakers extend in a southerly direction from the vicinity of buoy No.6 to a point 2-1/2 miles west of Leadbetter Point, thence from this in a S.S.E. direction to the west side of Leadbetter Point. Soundings showing the one fathom curve marking the extensive sand flat were taken. No soundings were attempted over the flat as they would be of little value and the bare places as determined by the plane-table, show it unfit for navigation. Very strong tidal currents set over this flat and all vessels should be warned not to approach within the three fathom curve.

In moderate heavy weather, it breaks occasionally on a considerable area, perhaps 1000 m. in diameter, some 2000 m. S.S.E. (mag.) of the Midchannel buoy. In very heavy weather it breaks all over the entrance. The bar itself, in the main channel, carries about 26 feet at mean lower low water; this depth extends from the Fairway to the Midchannel buoy, a distance of about one mile. Both inside and outside of the bar it deepens gradually.

"North Spit" breaks always. South Spit breaks all over in ordinary weather, and the spots on it that are bare at low water always break if they are covered at all.

The tidal currents are very strong in all parts of the bay and bar surveyed, but for the most part they set fair with the channel. Just beyond the end of North Spit, the tide sets strongly:- W.N.W. on ebb, and E.S.E. on flood. To the southward of the channel the currents are not so strong, and set S.S.W. on ebb and N.N.E. on flood. Still further to the southward the currents are practically parallel to the coast.

In the vicinity of position "73 q", green, (1300 m. E.S.E. of No.4 (red nun) buoy, there is a very strong current to the E.S.E. on a flood tide, which is liable to set vessels, especially small ones, onto the breakers. Vessels should not pass to the S.E. of buoy No.4, though in ordinary weather it is safe for light draft vessels when coming from the south to make the channel as far to the eastward as buoy No.4.

On an ebb tide, there are numerous small tide rips thruout

the entrance, and at the junction of the two arms of the bay near the gas buoy, the rips are frequently quite heavy. The prevailing winds and sea are from the West and North-West in summer time, and the rips are augmented by a heightened wind or sea.

The bottom is, almost without exception, of hard sand.

SAILING DIRECTIONS.

Approaching either from the North or South, bring the Fairway and Midchannel buoys in range and cross the bar on a N.E.x E. $3/4$ E. (mag.) course passing either side of the buoys, but preferably to the southward. Continuing this course pass^{ng} to the North or South of No.2 and then change course to N.E.x E. (mag.) so as to passtwo to three hundred meters N. of No's. 4 and 6. The breakers always show the north side of the channel and can be approached within 200 meters. The bare sand spit, East of No.6, marks the turning point when a course is set to E.x N. $1/2$ N. (mag.) to pass No.3 buoy about 200 meters, leaving it (No.3 buoy) on the port hand; the light buoy and beacon will be open on the starboard bow on this course. After passing No.3 buoy head on a N.E.x E. course for No.10, leaving it 100 meters on the starboard hand, and No.3- $1/2$ about the same distance on the port hand; then change to E.N.E. heading to the southward of No.5. When midway between No.5 buoy and the lighted dolphin (600 meters S.E. of it) haul gradually to the northward to bring the beacons near the Willapacific Wharf in range, then continue in mid-channel up to this wharf.

In clear weather and at night, local pilots bring the clump of trees at the end of Toke Point, vicinity of East Base triangulation point, to bear on an N.E. $1/2$ E. (mag.) course and stand straight in to abreast No. 6 buoy. The tree line on Toke Point always stands out distinct and clear from the surrounding coast line, and is a good mark day or night. It is recommended that this note be placed on the chart.

Respectfully submitted,

J. M. Coleman

Mate, C. & G. Survey.

Revised and approved,

R. B. Allison

Asst., Comdg. Chief of Party.

VEC
Sep. 7, 1911

HYDROGRAPHIC SHEETS 3297 & 3297a.

Willapa Bay, Washington, by Asst. R. B. Derickson
in 1911.

TIDES.

	Take Point ft.
Mean lower low water, or plane of reference on staff	3.8
Lowest tide observed " "	1.4
Highest " " " "	15.0
Mean range of tide	6.9

Coast and Geodetic Survey
SEP 14 1911
TIDAL DIVISION

Hyd Sheet No 3297 + 3297^a

Sept 22 1901.

The depths at the crossings do not agree as well as they should especially in the work over the bar at the entrance.

The survey shows a max. depth of 25 feet across the bar about 60 meters south of the fairway buoy.

The bar northwest of Δ Beacon is not properly developed.

More work should have been done on the 18 foot spot near C. Buoy #3

H. Simons

Verified;

Oct. 16th, 1911.

Pos. 21^(red)m, 21^(red)m + 82 m^(red), rejected on account of poor crossings and the fact that they seemed to be out of position. The line from 1a (green) to 6a (green), also crosses very badly, no soundings were shown on it. At pos. 45 (red) m, which is the end of a line, shoal water is noted 300 meters ahead, but no soundings were taken on the spot.

A dotted curve is shown here and the note "apparent shoal water reported"

R. L. Johnston