

2044 2045 2046

2044 2045 2046

Diag. Chart No. 6002-1

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*  
Field No. .... Office No. *2044-46*

LOCALITY

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

1890

CHIEF OF PARTY

*J. M. Helm U.S.N.*

LIBRARY & ARCHIVES

DATE .....

57A  
2044  
2045  
2046



U. S. COAST AND GEODETIC SURVEY.

*S. C. Mendenhall*, Superintendent.

State: *Washington.*

DESCRIPTIVE REPORT.

*Hydrographic* Sheets No. *5. 2044,*  
*2045 + 2046.*

LOCALITY:-

*Willapa Bay.*

*1890.*

CHIEF OF PARTY:

*Lt. J. M. Helm, U.S.N.*

2044 2045 2046  
2044 2045 2046  
2044 2045 2046  
2044 2045 2046

# 2045

DEPARTMENT OF COMMERCE AND LABOR  
COAST AND GEODETIC SURVEY  
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83  
SHA  
2045  
1890

Diag. Cht. No. 6002-1 *Acc No*

Department of Commerce and Labor  
COAST AND GEODETIC SURVEY

*J C Mendenhall*  
Superintendent.

State: *Washington*

## DESCRIPTIVE REPORT.

*Hyd* Sheet No. *2045*

LOCALITY:

*Willapa Bay*  
*See SHA 2044*

*1890*  
*190*

CHIEF OF PARTY:

*Lt J M Helm, U.S.N.*

# 2045

# 2046

U.S. COAST AND GEODETIC SURVEY  
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Department of Commerce and Labor  
COAST AND GEODETIC SURVEY

*J C Mendenhall*  
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State: *Washington*

## DESCRIPTIVE REPORT.

*Hyd. Sheet No. 2046*

### LOCALITY:

*Willapa Bay*  
*See SHA 2044*

*1890*  
*190*

### CHIEF OF PARTY:

*L. J. Maheln U.S.N.*

# 2046

Descriptive Report.

Section XI.

Hydrographic Sheet Nos. 1, 2 & 3.

~~Therapeutic~~ Tillamook Bay, Wash.

Coast Survey Steam Tug,

St. J.M. Helm, U.S.A., Comd'g.

1890.

The Shuts are respectively Shuts 1, 2 and 3, of 1890, <sup>Willapa</sup> ~~Shelton~~ Bay, Washington. Statistics are appended to this report, on Form 11, Statistics of Field Work.

Attention is called to several points on the various Shuts as follows, Shut No. 1 :-

To the wharf cut in at North Cove.

To the limits shown of Indian village of Georgetown.

To the fact that the life saving station has been moved from the old charted position across a slough to where now shown at our Signal Flag.

The shore line was run in on the point to the Sd. of North Cove around by signals Micaud, Wet and Black, curving up the beach towards Signal Ridge.

Shore line of an island where our signal Boat was built was run in, also of an island on which was old triangulation point Log.

Crescent Island and a small island to the westward of it, near Leadbetter Point, have disappeared.

The wreck used as a signal by McArthur's party in 1887 has disappeared.

Shut No. 2 :-

To the several wharves cut in at Bay Centre, Palux River; and on the Willapa River at Sea Haven, South Bend Mill,

1.

South Bend, Sash Mill above South Bend, and at the proposed site of North Pacific City, where our signals Rest and Pile are.

To the stakes along Willapa, North and Palux River channels, and to the stake at signal Pole.

Along the Willapa River the shore line has been run in from signal Swamp to the end of the Survey past signal Road on the left bank, and from near signal Dew to signal Cliff on the right bank.

To the log boom of piles below signal Ridge in Willapa River.

To the investigation of the shore line of Mailboat Slough, from signal Star to signal Flash, and of the branches of this Slough.

Sheet No. 3:-

To wharves cut in at proposed site of Stanley (on which is our signal Hen), at Sunshin (on which is signal Saw), and at Sealand (on which is signal Sea).

To the fact that the wharf at Oysterwillow has been destroyed, and isolated house now stands on piles where end of wharf formerly was and on this house our signal Jay was built.

To log boom of piles extending from upper end of wharf at Sunshin along bank of Kasal River.

To the shore line of Kasal River run in from below signal Shell to signal Dub on the right bank and on the left bank from signal Hen to signal Drift

2.

The locality of the survey was on ~~Shoalwater~~ <sup>Willapa</sup> Bay in southwestern Washington. It is a large bay with narrow channels between many shoals and mud flats which are mostly exposed at low water. There is a bar across its mouth extending some distance off shore and the bay is entered by two channels known respectively as the North and South Channels.

Several small streams empty into the bay, the most important being the Willapa, Nasal, Palux and North Rivers.

For vessels of 10 ft. draught the Willapa River is navigable at high water as far as Willapa City miles from its mouth, the Nasal at high water for six or seven miles above Demushine, North River at high water as far as the Cannery and the Palux River at high water as far as Bay Center. Small tugs at high water sometimes enter some other streams to tow out logs.

The shores near the entrance to the bay, and on the peninsular inside, are low and sandy with low wooded hills behind them; on other parts of the bay low wooded bluffs come close down to the water's edge and are faced by large areas of sand and mud flats bare at low water.

The banks of the Willapa River are low and marshy, partially dyked, but said to overflow at winter tides as far as South Bend on one bank and Signal Cliff on the other when the high land begins to come close down to the river.



2.

Vessels engaged in the carrying trade consisted at the time of our stay of a steamer, the General Miles, running from Portland, Ore., via Astoria, to various points on the bay about every five days, but the regularity of her trips was dependant in a great measure on the condition of the Columbia River and <sup>Willapa</sup> Shoalwater Bay bars at certain seasons. Of sailing craft as many as six different brigantines and schooners visited the saw mills on the bay during last summer for lumber cargoes. These vessels ply steadily generally between San Francisco and the bay and each of the two mills will average three vessels loaded and dispatched per month. The General Miles and the sailing vessels bring in small cargoes of general merchandise and the Miles on return trips in fall and winter carries out large quantities of Oysters.

3.

The coast presents a low and very indistinct aspect on approaching from seaward. To the N.W. of Cape Shoalwater are low hills back of the beach. On approaching from seaward Cape Shoalwater Light House will, in good weather, probably be the first definite land mark made; in hazy, smoky or foggy weather a vessel approaching from seaward would be on the shoals, in the breakers and on dangerous ground before any land would be made. Heavy breakers on the middle sands

3.

and the north spit will ordinarily be seen and the buoy at the entrance to the South Channel would probably be the first land-mark found. A whistling buoy, well off shore, is very much needed. The lead should be freely used whenever in this vicinity. Ranges are known to the local pilots but are subject to frequent changes to suit the changes in the channels.

In the South Channel the pilots usually run by the buoys unless they have found them to be out. The light house is often used to give an approximate course till the buoys can be picked up. No. 4 buoy, of the South Channel, a little open with Toke Point is a general range for the North Channel, but when navigating this Channel pilots generally watch the breakers on either hand, the swell on the bar and avoid bad looking spots.

In ordinary weather the swell in the North Channel is either ahead or astern and this Channel is often used on this account, since in the South Channel a vessel is exposed to a swell abeam and with a strong flood tide rushing over the sands will roll heavily even in good weather.

In moderate or slightly bad weather the North Channel is often breaking when the South Channel can be freely used.

The only light house is the Cape Shoalwater light house, a low white structure, bearing a light of the fourth order, and situated to the northwestward of the interior of the

3.

bay and  $6\frac{1}{2}$  miles to the str. of the bar buoy in the South Channel.

4.

The least and greatest channel depths can best be taken off the chart after the soundings have been fully plotted.

Dangers near the channels are the middle sands between the two channels, a long spit extending out to the str. of the North Channel, and shoals making out from Leadbetter Point towards the South Channel. Inside the bay are numerous shoals extending out from the shores and also isolated shoals, all of which will be shown when the survey is completed.

In the North Channel there are no buoys and its passage should not be attempted without a pilot or local knowledge.

With a chart corrected to date for location of dangers and buoys a pilot might not be necessary for the South Channel in good weather; here the deepest water is found near the middle sands whose banks are steep and dangerous and usually defined by breakers, but the water in the channel is often much agitated by the strong flood tide and a stranger might easily be confused. This channel is further narrowed abeam buoy No. 1 by shoals making out from Leadbetter Point. Sometimes the bar breaks heavily even when it is not blowing hard near the land and in

such a case a stranger should not attempt to cross without a pilot. The captain of the tug which usually lies in North Cove, unless towing in the bay, is a pilot and will go to a vessel making a signal. Once inside the bay the channels at low water are well defined, a vessel should go to North Cove or South Bend in ordinary weather without trouble at any time, using aids to navigation & chart. Down the bay, towards the Kasal River, the buoys are further apart and unless the weather is clear enough for them to be seen the navigator must depend on correctures of the buoys, tides and the compass.

The channel of North River is too narrow to be navigated by chart, vessels have to run by the piles bearing red and black targets which are numerous on either bank. The Palux River channel is very narrow and difficult to follow, it has a buoy (No. 1) at the entrance and four piles at intervals on the southern side, but there are no targets on these piles. The Wil-lapa and Kasal Rivers can be navigated from the chart when finished without trouble as far as the survey extends.

If you want a pilot or tug show your flag and the tug lying in North Cove will be signalled from the light house by the life saving boatman who patrols the beach near there. This is the only sea-going tow boat on the bay, a boat from Gray's Harbor sometimes tows here also. Pilot fees are not com-

4.

fulsome and there are not any harbor regulations.

5.

The channels are subject to frequent and sudden changes. Changes are found on the bar, on both sides of the entrance to the harbor, and inside the bay to the e'd. of the mouth of the Palux River. The channels do cross shifting bars. The character of the bottom is usually hard sand in the channels, in the rivers and in the bay near river mouths it is mud.

For tugs and small steamers the best anchorage near the Entrance of the bay is in North Cove, it is impracticable for sailing vessels. In the northern part of the bay vessels will find good anchorage anywhere in the channel between Foke Point and the mouth of the Willapa River. Sailing vessels can bound or anchoring over night often anchor in mid channel just inside of Leadbetter Point. Vessels anchor in mid stream off Sea Hawk, South Bird and Sunshine, in the channel off Sealand a little to the e'd. of the wharf, and in mid channel abreast Oysterwill. There is no anchorage in the Palux River for vessels of any size, the small steamers going in there lie alongside the end of the wharf at Bay Centre. There are no harbor improvements in progress or contemplated.

6.

Four current observations have been taken so far as it

6.

would be necessary to anchor the vessel especially for this purpose in exposed places inconvenient for other hydrographic work.

Inside the bay and in the north channel across the bar the set of the currents is with the channels; the set of the current is diagonally across the south channel, in this channel a vessel on a flood tide is drifted towards Leadbetter Point and at the same time into the bay. The velocity of the tidal currents is strong at spring tides, weak at neap tides.

7.

Since the McArthur's survey in 1857 the present north channel has broken through the middle sands and these sands have grown out towards the westward and also to Sd. and Ed.

The south channel has been narrowed and is now near Leadbetter Point. Changes have taken place inside Leadbetter Point, the outlines of Log Island have changed considerably and an island has appeared on which we built our signal Post. Crescent Island and the small island to westward of it near the main land have disappeared. The outlines of Suag Island have undergone considerable change.

8.

There is no ice on the bay, occasionally there is some on the rivers during severe winters. Freshets occur during the winter. There is more or less fog in the early fall, September and

8.

October, especially after a dry summer, but there is little fog after the first good rains come. Easterly winds in the fall drive a dense smoke out of the forests which greatly interferes with navigation.

9.

The prevailing winds are from north to north-west in summer and in winter are Southeastly and Southely. Gales blow from the S.E., but heaviest from S.W., they do not affect anchorage in the bay and a vessel with good ground tackle should hold in any weather. High breezes from E.S. and S.E.S. are frequent in fall and winter.

10.

A stranded vessel does not break up rapidly, in the experience of the Captain of the life saving station, since she will bed herself in the sands. The life saving station is situated in North Cove, but one of the crew constantly patrols the beach in the vicinity of the light house where a view of the ocean can be had. The nearest hospital available for seamen is St. Mary's Hospital, in Astoria, Ore.

11.

There are no quarantine regulations, boarding stations, limit for pratique or fees.

12.

Fresh water may be obtained by vessels of light draught at

either of the saw mills on the Willapa or Nasas Rivers. There is a good stream of fresh water piped out on an old wharf about two miles above South Bend on the Willapa, but only a very light draught vessel could reach it. Water can also be purchased from the tow boat J.H. Coleman at North Cove.

There are no regular ship chandler's stores on the bay, small rope and a few miscellaneous ship articles can be obtained at the general stores in South Bend or Lemhi.

Beef may always be had at South Bend, also at other places on the bay if time is given to kill. Salmon are offered for sale in season, and oysters are plentiful. Vegetables are limited in variety and quantity. Game, especially wild fowls, is plentiful in season. There is no coal to be had on the bay, all the small steamers burn wood which is purchased from the saw mills. There are no repair shops for vessels or machinery nearer than Astoria, Ore.

There are wharves at the following mentioned places and the depth alongside at mean low water is noted:-

North Cove, 11 to 12 ft., at outer end.

Dea Haven, 13 ft.

South Bend Mill wharf, 3 fms., at lower corner to 16 ft., at the upper corner.



13.

South Bend (O Freight), 10 to 12 ft.

Sash Mill above South Bend (O Mill), 10 to 12 ft.

Northen wharf at proposed site of North Pacific City on Willapa River (O Pile), N.W. corner 10 ft., S.E. corner 10 ft.

Southern wharf at same place (O Rest), N.W. corner 8 ft., S.E. corner 10 ft.

Bay Centre, Palux River, 8 to 10 ft.

Sealand (O Sea), 3 fms. 5 ft., at outer end.

Dunshin, Mill wharf (O Saw), abreast this signal 3 fms. 5 ft., at lower end of wharf 12 and 13 ft.

Wharf at proposed site of Stanley, Kasal River, (O Hum), 14 to 15 ft. at head of wharf.

14.

There is no weather service or time ball.

15.

There is no branch hydrographic office or regular station for reporting results. A vessel standing in towards the beach if approaching from the S'd., will be signalled to the tug in North Cove by hoisting a flag on the Southern flag staff at the light house, if approaching from the N'd. the flag is raised on the northern flag staff. This signal is made by life saving boatman on patrol. Should a vessel be expected the tug will go out to meet her, otherwise she will not unless the no-

15.

set hoists a flag, makes some signal, or lays on and off the bay some time. There is no ice code.

16.

There are no docks or marine railways.

17.

The steamer General Miles brings a few passengers on his trips from Portland. Tugs, or small steamers, ply between the railroad terminus at Sealand and various points on the bay. One runs direct from South Bend to Sealand and returns daily, another, which carries the mail, goes from Willapa City via South Bend, Sea Haven, North Cove and Bay Center to Sealand and returns over the same route daily. A small tug makes daily round trips from points on the Nasal River and Sunshine to Sealand. A narrow gauge railroad, the Ilwaco and Shoalwater Bay R.R., runs up the peninsula from Ilwaco on the Columbia River (from which place communication is had with Astoria by steamer) to Sealand making two round trips daily. There is a daily mail distributed through the bay by the steamer mentioned and a stage carries the mail daily from North Cove to Gray's Harbor and returns. There is a telegraph office at Sealand. There are postoffices on the bay at Sealand, Sunshine, Oysterville, Bay Center, North Cove, Sea Haven, South Bend and Willapa City.

18.

There is no custom house or customs regulations. Captain Brown, of the life saving station, has authority to hold vessels from foreign ports and seal hatches until inspectors of customs arrive from Astoria.

19.

There are small villages at North Cove, Bruceport, Bay Centre, Sunshin, Stanley, Sealand and Tahcotta, Oysterville, Sealavau, South Bend and Willapa City; an Indian village called Georgitown near North Cove, a general store on Joke Point and a Cannery on North River. North Cove is a small village spread over a good deal of area back of the wharf, there is a country store, post-office and hotel. There is a daily stage mail to and from Gray's Harbor and communication by tug with points in bay. No plan of this village could be obtained.

Bruceport is an old town and now practically dead, only a few small boats engaged in oystering visit the place and they go and come near high water. No plan of this place could be obtained, none was on file.

Bay Centre is a small village lying at shore end of the wharf in the Palus River and extending back a little. It has a small country store, the inhabitants are chiefly engaged in the oyster business. No plan has ever been made of Bay Centre.

Sunshin is a mill village on the Kasal River. Here the Shoalwater Bay Mill Company own a saw mill, general store,

warehouse and a number of small cottages for their employees, a school-house, and sufficient wharfage for their own use. Connection is maintained with Sealand by tug boat and there is a tri-weekly mail.

Stanley had on Nov. 1, 1890, a wharf, two or three dwelling houses, a hotel and store in process of construction and a saloon. Outside communication is the same as at Dunshin. A plan of the proposed town is forwarded.

Sealand and Nahcotta are practically one town, the proposed sites being separated merely by the railroad track; both places are spoken of as Sealand by people on the bay not interested. This is the bay terminus of the Stevaco and Shoalwater Bay R.R., and has communication with points on the bay by small steamers. There are several country stores here, a restaurant and hotel. The post-office is in Sealand, the depot and telegraph office in Nahcotta. A plan of the proposed towns is forwarded.

Oysterville, the county seat of Pacific Co., is one of the oldest towns on the bay and, until the recent rise of South Bend, was the principal commercial place. It has a church, schoolhouse, stores and the county buildings. The inhabitants are principally engaged in the oyster business. There is stage communication twice each day with Sealand. A plan of this place is forwarded and also of Stevens addition to the town.

Sea Haven is situated on a low and marshy flat on the left

bank of the Willapa, the land here is partially covered over winter tides.

On Nov. 1st, 1890, there was one wharf, a frame hotel, a small building used as the Land Company's office and a printing office, a restaurant, a bank, and two or three small houses. There is a weekly newspaper published here. Outside communications kept up by small bay boat mentioned. Its proposed location is shown on a general plot of Willapa River forwarded, and plan is also sent.

South Bend, on the Willapa River, is the principal commercial town on the bay. On Nov. 1st, 1890, it had perhaps 1000 to 1200 inhabitants, it was gaining rapidly; a city government had been organized. Grading was in progress for a rail-road. There were two banks, a weekly newspaper, a saw mill, a dash and doon mill, a church, school-house, and two hotels together with numerous stores. Its location is shown on the general plot of Willapa River forwarded. The place on this plot called North Pacific City exists only on paper and in the minds of real estate boomers.

Willapa City is an old village at the head of navigation for light draft vessels (at high water) on the Willapa.

Georgetown is a small Indian village on Government reservation near North Cove. There are a number of shagging houses between the limits marked on Sheet No. 1; during the summer time but few Indians remain here.

There is a country store on Foke Point, there is no wharf

19.

here, but Steamers can approach the point very closely and do so when signalled to stop for freight or passengers. There is a small settlement at the Caumey on North River.

20.

There is no keep in the bay.

21.

Custom and usage have modernized the old name *Whit-a-pak* (of the river) into *Willapa*.

*Sea Haven* is so written, as two words.

In addition to the above scheduled subjects I submit the following remarks in reference to certain points:-

#### Buoys.

The farewell buoy of the South channel is gone, it should be replaced. The buoys in the South channel, with the exception of No. 4, are too small, they are frequently submerged on strong tides and should be replaced by larger ones. These buoys should not be more than one mile apart. A large whistling buoy should be placed well off the North channel, both for the benefit of vessels making for the bay and also for those passing along the coast in thick weather. The North channel should be marked by channel buoys. There should be a buoy between buoy No. 3 and Duke Point to mark the edge of Jenny Ford Spit.

6/2/91

Another stake should be placed between stakes Nos. 3 and 5 (Mullapa River Channel) and the flats on the opposite side staked out.

The numbers of the stakes in this channel should be changed to conform to law.

In the southern part of the bay the buoys should be larger and more numerous, a large buoy is especially needed off Riddell Spit to replace the small red buoy No. 2, now there. The channels to Sunshin and Sealand, below Oysterville, should be buoyed at once.

A light-house of the first order should replace the present Cape Shoalwater light.

The life saving station should have modern appliances.

Very respectfully,

St. U.S.A., Asst. Chf. Survey,

Comdg.



Statistics of Field Work executed by *Lieut. J. M. Helm, U.S. C., Asst. Co. S. Survey.*

Date of beginning field work..... *July 25, 1890.*  
Date of closing field work..... *Nov. 9, 1890.*

RECONNAISSANCE:

Area of, in square statute miles.....  
Lines of intervisibility determined as per sketch submitted.....  
Number of points selected for scheme.....

BASE LINES:

Primary, length of.....  
Secondary, length of.....  
Beach measurements, length of.....  
Number of days employed in measurements of base.....  
Number of days employed in re-measurements.....

TRIANGULATION:

Area of, in square statute miles.....  
Signal poles erected, number of.....  
Observing tripods and scaffolds built, number of.....  
Observing tripods and scaffolds built, heights of.....  
Days occupied in opening and verifying lines of sight, number of.....  
Stations occupied for horizontal measures, number of.....  
Stations occupied for vertical measures, number of.....  
Geographical positions determined, number of.....  
Elevations determined trigonometrically, number of.....

GEODESIC LEVELING:

Elevations determined by spirit-leveling of precision, number of.....  
Lines of geodesic leveling, length of.....

LATITUDE, LONGITUDE, AND AZIMUTH WORK:

Latitude stations occupied, number of.....  
Pairs of stars observed for latitude, number of.....  
Average number of observations on a pair.....  
Longitude stations, telegraphic, number of.....  
Longitude stations, telegraphic, number of nights on which signals were exchanged.....  
Longitude stations, chronometric, etc., number of.....  
Azimuth stations, number of.....  
Number of nights of observations for azimuth.....  
Number of stars observed for azimuth.....

GRAVITY DETERMINATIONS:

Number of pendulum stations occupied.....

MAGNETIC WORK:

Stations occupied for observations of the magnetic declination, number of.....

Stations occupied for observations of the magnetic dip, number of.....

Stations occupied for observations of the magnetic intensity, number of.....

TOPOGRAPHY:

Area surveyed in square statute miles.....

Length of general coast-line in statute miles.....

Length of shore-line of rivers in statute miles.....

Length of shore-line of creeks in statute miles.....

Length of shore-line of ponds in statute miles.....

Length of roads in statute miles.....

Topographic sheets finished, number of.....

Topographic sheets, scales of.....

Topographic sheets, limits and localities of:

HYDROGRAPHY:

Area sounded in square geographical miles.....

Number of miles (geographical) run while sounding.....

Number of angles measured.....

Number of soundings.....

Number of tidal stations established.....

Number of specimens of bottom preserved.....

Current stations, number of.....

Hydrographic sheets finished, number of.....

Hydrographic sheets, scales of.....

Hydrographic sheets, limits and localities of:

Area sounded in square geographical miles.....	90
Number of miles (geographical) run while sounding.....	769.45
Number of angles measured.....	8792
Number of soundings.....	38543
Number of tidal stations established.....	6
Number of specimens of bottom preserved.....	0
Current stations, number of.....	1
Hydrographic sheets finished, number of.....	3 partially
Hydrographic sheets, scales of.....	1-20000

*Willapa Shoals Bay, Washington.*

*Sheet No. 1, From outside Bar to Joke Point*

*Sheet No. 2, Northern portion of Bay as far south as Oysterville*

*Sheet No. 3, Bay south of Oysterville.*

*Willapa*  
*Statistics, Shuts Nos. 1, 2 and 3, ~~Franklin~~ Bay, Wash.*

	July	Aug.	Sept.	Oct.	Nov.	Totals.
No. days on working grounds	7	31	30	31	9	108
No. days hydrographic work	5	27	21	26	5	84
No. days prevented by weather &c.	1	0	6	3	2	12
No. Sundays	1	5	4	4	2	16
No. days building signals	5	7	5	7	0	24
No. signals built						96
No. signals occupied	0	19	0	41	0	60

Shut No. 1.

Vessel.	Number of					
	Sag. Books.	Angle Books.	Tide Books.	Fair Journals.	Fair Angle Books.	Fair Tide Books.
Gedung	1			1		
1st whaleboat	2			} 2		
2nd whaleboat	1					
Steam Launch	4			3		
Total	8	1	2	6	1	2

Tide stations, one, North Cove.

## Sheet No. 2.

Vessel.	Number of					
	Sdg. Books.	Angle Books.	Tide Books.	Fair Journals.	Fair Angle Books.	Fair Tide Books.
1st whaleboat	4			4		
2nd whaleboat	4			3		
Steam Launch	4			4		
Total	12	4	6	11	4	6

Tide stations, four, North Cove, Fork Point, Sea Haven, Bay Centre.

## Sheet No. 3.

Vessel.	Number of					
	Sdg. Books.	Angle Books.	Tide Books.	Fair Journals.	Fair Angle Books.	Fair Tide Books.
1st whaleboat	1			1		
Steam Launch	3			2		
Total	4	2	2	3	2	2

Tide stations, two, Sunshine, Sealand.

No. officers attached to party, 6; No. men in party 31.

Records.	Leadsmen.	Tide Observers.
Jay Geo. M.W. Joyner.	Frank Anderson, (A.T. Mr.)	P.N. Christiansen, (A. Write.)
P.N. Christiansen, (S. Write.)	Thos. P. Hilyard, (B. Mate.)	Frank Anderson, (A.T. Mr.)
	Ernest Meyer, (M. at A.)	Thos. P. Hilyard, (B. Mate.)
		Henry Dietrich, (Sea.)
		Thomas Rowe, (sea.)
		Alex. Flood, (sea.)
		Herwan Jensen, (sea.)
		Edward Bailey (sea.)
		Nils Gabrielson (sea.)

Day Letters of Ship and Boats on all the Shuts.

Gedney	Capital Letters, red.
Steam Launch	Small Letters, blue.
1st whaleboat	Small Letters, green.
2nd whaleboat	Small Letters, red.

Note:- Shore Line Observations plotted in Small black letters &c.

Sheet No. 1.

Pullapa  
Shoalwater Bay, Washington

Scale 1-20000.

Begin Aug. 29

Area 31 sq. mi.

Lieut. J. M. Helms, U.S.A.,

Ended Nov. 7

In charge of Party.

Date.	Ltr.	Book.	Number of			Notes.	Observers.
			Miles.	Edgs.	Angles.		
Sept. 11	A	1	7.80	303	27	Leamy	Lt. J. M. Helms
" 14	B	1	24.00	562	164	"	Lt. A. G. Rogers
" 18	C	1	6.00	112	37	"	Ens. J. H. Gibbons Ens. A. C. Mayne
" 30	D	1	4.50	85	14	"	Ens. G. W. Brown
Oct. 3	E	1	9.00	177	56	"	
Nov. 7	F	1	8.00	161	44	"	
<b>Totals</b>	<b>6</b>		<b>59.30</b>	<b>1400</b>	<b>342</b>		

Sheet No. 1. (cont'd)

Date.	Letter.	Book.	Number of			Need.	Observations.
			Miles.	Sigs.	Angles.		
Aug. 29	a	1	11.70	582	130	St. Launch	Ens. J. H. Gibbons
" 30	b	2	12.60	570	168	" "	Ens. Guy W. Brown
Sept. 1	c	1	8.60	405	106	" "	
" 2	d	2	23.75	924	242	" "	
" 3	e	1	14.00	448	110	" "	
" 4	f	2	8.20	334	106	" "	
" 6	g	1	9.30	319	82	" "	
" 8	h	2,3	10.00	405	124	" "	
" 10	i	1,4	11.10	530	138	" "	
" 11	j	3	5.00	166	60	" "	
" 13	k	3	8.90	259	66	" "	
" 15	l	4	5.75	252	78	" "	
" 17	m	3	7.10	248	90	" "	
" 18	n	4	13.00	417	126	" "	
" 19	o	3	10.00	323	112	" "	
<b>Totals</b>		15	159.00	6182	1738		

Shut No. 1. (cont'd)

Date.	Letter.	Book.	Number of			Vessel.	Observations.
			Miles.	Sdgs.	Angles.		
Aug. 29	a	1	5.00	547	92	1st. wh. boat	Lt. A. G. Rogue
Sept. 5	b	2	10.50	813	147	" "	Eus. Act. Mayer
" 6	c	1	3.40	290	66	" "	Pay Geo. W. W. Joyous.
" 8	d	2	11.00	513	122	" "	
" 10	e	1	8.60	381	114	" "	
" 11	f	2	.25	27	4	" "	
" 13	g	1	2.50	194	32	" "	
<b>Totals</b>			41.25	2765	577		
Sept. 5	a.	1	10.75	815	200	2nd wh. boat	Eus. Tibbous & Brown
<b>Totals</b>			10.75	815	200		

Recapitulation, Shut No. 1.

Vessel.	Days.	No. miles.	No. sdgs.	No. angles.
Sedney	6	59.30	1400	342
St. Launch	15	159.00	6182	1738
1st whaleboat	7	41.25	2765	577
2nd whaleboat	1	10.75	815	200
<b>Totals</b>	29	270.30	11162	2857



Sheet No. 2.

*Niuepa*  
*Shoalwater Bay, Washington.*

Scale 1-20000

Began Aug. 7

Area 44 sq. mi.

Lieut. Jm. Helm, U.S.N.

Ended Nov. 7

In charge of Party.

Date.	Letter.	Book.	Number of			Notes.	Observations.	
			Miles.	Sdgs.	Angles.			
Aug. 7	a	1	5.00	391	82	1st. w. boat	Lt. A. G. Rogers	
" 8	b	2	13.50	797	168	-	-	Ens. A. J. Mayo
" 9	c	1	10.60	654	130	-	-	Ens. G. W. Brown
" 11	d	2	14.25	887	163	-	-	Ens. W. H. G. Bullard
" 12	e	1	13.00	845	164	-	-	
" 13	f	2	6.20	398	94	-	-	
" 14	g	1, 3	14.00	1106	168	-	-	
" 15	h	4	9.80	601	110	-	-	
" 16	i	3	6.10	407	72	-	-	
Sept. 17	k	4	6.60	430	78	-	-	
" 18	l	4	4.80	283	52	-	-	
" 23	m	3	7.10	472	110	-	-	
" 24	n	4	6.25	374	84	-	-	
" 25	o	3	7.00	471	96	-	-	
Totals			124.20	8116	1571			

*Sheet No. 2. (cont'd)*

Date.	Letter	Book	Number of			Vessel.	Observers.
			Miles.	Sdgs.	Angles.		
Aug. 13	a	1	6.50	406	80	St. Launch	Lt. A. F. Rogers
" 27	b	2	6.60	333	76	" "	Ens. J. H. Gibbons
" 28	c	1	14.00	660	140	" "	Ens. Guy W. Brown
Sept. 23	d	2	12.30	493	128	" "	Ens. Art. Mayer
" 24	e	1	24.00	903	248	" "	
" 25	f	2	17.20	703	138	" "	
" 26	g	3	13.10	638	148	" "	
Oct. 10	h	3	6.20	311	118	" "	
" 13	i	2	4.75	312	94	" "	
" 14	j	3	7.30	434	110	" "	
" 15	k	3	1.50	117	32	" "	
" 16	l	3	1.60	114	34	" "	
" 17	m	3	5.60	314	96	" "	
" 20	n	2, 3	3.80	198	48	" "	
" 22	o	4	8.00	386	96	" "	
" 28	p	4	6.50	243	64	" "	
Nov. 5	q	4	1.60	59	12	" "	
" 6	r	4	8.60	378	70	" "	
" 7	s	4	4.80	171	34	" "	
<b>Totals</b>			153.95	7173	1766		

Shut No. 2. (cont'd.)

Date.	Letter.	Book.	Number of			Vessel.	Observer.
			Miles.	Sdgs.	Angles.		
Aug. 7	a	1	10.00	439	128	2nd w. boat	Lt. A. G. Rogers
" 8	b	2	15.80	990	190	" "	Ens. J. H. Gibbons
" 9	c	1	12.55	782	158	" "	Ens. G. M. Brown
" 11	d	2	12.60	762	190	" "	Pay Sec. W. W. Jones.
" 12	e	1	6.50	469	116	" "	
" 13	f	3	3.40	243	62	" "	
" 14	g	4	9.00	427	134	" "	
" 15	h	3	7.00	441	86	" "	
Oct. 14	i	3	2.10	195	28	" "	
" 16	j	3	4.70	384	46	" "	
" 17	k	3	4.80	388	52	" "	
Totals			88.45	5520	1190		

Recapitulation, Shut No. 2.

Vessel.	Days.	No. miles.	No. sdgs.	No. angles.
1st whaleboat	14	124.20	8116	1571
Steam Launch	19	153.95	7173	1766
2nd whaleboat	11	88.45	5520	1190
Totals		366.60	20809	4527

Sheet No. 3.

*Misaki Shoalwater Bay, Washington.*

Scale 1-20000

Began Oct. 23

Area 15 sq. mi.

Lt. Jm. Helm, U.S.A.

Ended Nov. 3

In charge of Party.

Date.	Letter.	Book.	Number of		Angle.	Vessel.	Observer.
			Miles.	Sdgs.			
Oct. 23	a	1	17.60	694	164	St. Larnuch	Ens. J.H. Gibbons
" 24	b	1	21.80	924	216	" "	Ens. J.W. Brown
" 25	c	1,2	15.80	715	208	" "	
" 27	d	2	2.80	173	40	" "	
" 28	e	2	6.00	276	66	" "	
" 29	f	2	20.70	868	188	" "	
" 30	g	2	4.90	209	40	" "	
Nov. 1	h	2	9.70	426	62	" "	
" 3	i	3	6.50	344	50	" "	
Totals			105.80	4629	1034		

Sheet No. 3. (cont'd)

Date.	Letter.	Book.	Number of			Vessel.	Observer.
			Miles.	Sdgs.	Angles.		
Oct. 27	a	1	6.30	560	60	1st. n. boat	Lt. A. G. Rogue
" 28	b	1	1.70	132	26	" "	Eus. J. N. Gibbons
" 29	c	1	5.50	317	90	" "	Eus. A. M. Mayne
" 30	c	1	6.75	458	106	" "	Eus. G. W. Brown
" 31	e	1	2.50	180	32	" "	
Nov. 1	f	1	4.00	296	60	" "	
<b>Totals</b>			26.75	1943	374		

Recapitulation, Sheet No. 3.

Vessel.	Days.	No. miles.	No. sdgs.	No. angles.
St. Launch	9	105.80	4629	1034
1st whaleboat	6	26.75	1943	374
<b>Totals</b>		132.55	6572	1408

